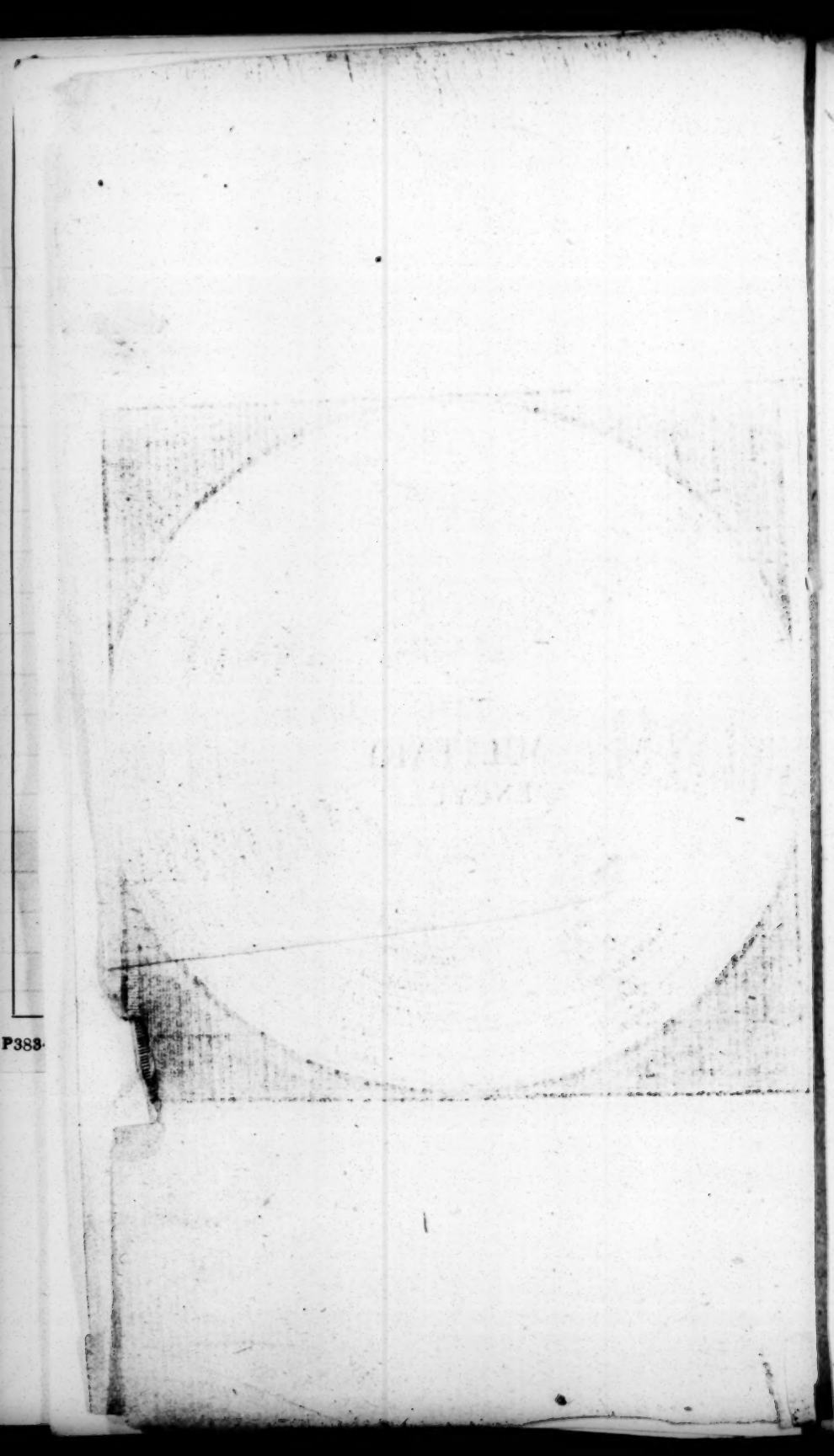


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THE
Art of VVarre;
OR
Militarie diſcourſes;
Shewing

How a Prince is to prepare himſelf to make warre, to raiſe an armie, and the manner of marching.
The encamping the armie.
The embattailing the armie.
The building of forts.
The defence of fortreſſes.
The taking of fortreſſes by petard, or any other ſurpriſe, or by treacherie.
How to beſiege and expugne cities.
The taking fortreſſes by famine.
The defence of fortreſſes againſt the petard, and other ſurpriſes and treacheries.
The defence of fortreſſes againſt ſieges.
The defence of fortreſſes againſt famine.
The relieving places beſieged.
The Artillerie, the foundings, mixtures, and meaſures of Ordinance.
The offices of militarie men.
The fireworks.
The militia of the Grecians.
The Romane militia.
The forming of battaillons.

Engliſhed by *F. C.*

CAMBRIDGE:
Printed by ROGER DANIEL, Printer to the famous UNIVERSITIE 1642.
And are to be ſold by *F. Conſtable* at Weſtminſter hall.

LIBRA

Vpon the accurate tranſlation of the Lord *Du Praiſſac* his Militarie diſcourſes, done by his eſteemed friend Captain JOHN CRUSO.

TImes have their Genii: *yea; and Places too.*
For contemplation ſome are; ſome to do.
That Laurell, which ha's crown'd Aſtræa's head,
May to Bellona's *front be altered.*
Arts have their times too. In that ſeaſon ſing
The Muſes nine about their dancing ſpring:
Another while much fitter Muſick are
Thoſe ſterner arts, that teach us how to warre:
(Happie that age, that can ſo much foreſee,
To ſtudy warre in her tranquillitie.)
That Amazonian offſpring, which doth ſit
Near Pallas *ſtrength, and near* Minerva's *wit.*
Theſe teach the needfull uſe of Armes to know;
To march by their field-muſick quick, or ſlow;
To ſit down 'fore a town; T'encamp in field;
How to embattail; And how forts to build;
T'aſſault; defend; To famine; force; ſurprize;
How to releeve beſieg'd; void treacheries;
And (that which makes commanders worths grow high)
How ſtratagems to make; and how t'apply:

Of theſe the Lord Praiſſac *the skill hath ſhown:*
(So Greatneſſe by her vertues beſt is known)
To fortifie; To make a Canonier;
To contrive fireworks are directed here;
And, leſt th'unpractick off'cer of a Band
Should know his title, but not underſtand
His place, and dutie, he hath tane ſome pain
To teach.' Twere hard, his labour ſhould prove vain;
And moſt induſtrious Cruſo *looſe his end,*
That to the ſtate did ſo much oyl intend.
He, that hath but the language, boldly may
Seek to tranſlate, yet is but half the way.
Who renders Sence for Sence, and Words of Art
Does properly expound, does act the Part.
Praiſſac *is well-come into England. We*
May joy in him: But yeeld our thanks to Thee.

W. Denny Eſq. Serg. Ma.

To his very worthie friend Captain John Cruſo.

COuld I command an Armie forth, & train
Inventions Forces, had I a Martiall vein:
I would lay ſiege to Cenſure, and ſurpriſe
The ſtrongeſt Fortreſſe Envie could deviſe
To raiſe againſt thee, *Momus* force to yeeld,
And leave thy judgement Maſter of the field.

Hadſt

Hadſt thou vouchſafed onely to impart
The *Centaures* skill, and the *Theſſalian* Art;
Had I but known thee in thy Cavallrie
What dim-ey'd *Ælian* ſpi'd not to deſcrie,
And, where *Walhauſen* faild, to bring to light
What *Baſta* wanted and the* *Malta* Knight: *Luys Melzo.*
An oath had gone for't, *Cruſo* to beget
Mars with *Minerva* inceſt did commit.
But when I further ſee the Infantrie
Commanded by thee, and th Artillerie;
Pike, halbert, partizan, musket, carbine,
The faulcon minion, canon, culverine:
Forts rais d, by ſiege cities environed,
Encamped Armies, and embattailed:
Me thinks that God of warre which heretofore
(How e re Great Greece and Rome did him adore)
But an Apprentice was, at length by thee
Is Maſter of his trade, and now made free,
Nor is t ſufficient to ſet *Praiſſac*'s name
Bef re thy book as authour to the ſame.
I know thou can'ſt not like a cipher be,
Unleſſe anothers worth to decuply.
And this thou haſt done. For it will be ſaid,
'Twas *writ* by *Praiſſac*, but by *Cruſo made*.
Nay, Poets Prophets are. In time to come
They l ſay, Thou ſtol'ſt *France*'s *Palladium*.
Till then I'le ſtile thee (and not think I erre)
The warlike *Hermes*, *Mars*'s Interpreter.

Ri. Watſon Col. Gon. & Cai. ſoc.

Ad

Ad digniſsimum virum & de re mi
litari optimè meritum *Johannem Cruſo*, hujus operis *Interpretem*, factâ primùm ad *Galliam* Apoſtrophe.

GAllia, *quid noſtras armato milite comples*
Oras, belligeri prodiga terra Dei?
Non ità dividuam concors alit Anglia *pacem,*
Non eſt, ut vires ambiat illa tuas.
Non ita de proprio diffidit Marte, *triumphat*
Tunica præſidiis imperioſa ſuis.
Veſtra vel adverſas ſi vis juvet invida partes,
Sentiet emeritam lis rediviva manum.
Interea non culpo tuos Cruſõe *labores:*
Id dubito, ars major ſit tua ſítve fides.
Illa, vel extremi recoletur limite mundi,
Hæc intra patriæ limina nota tuæ.
Quæ, cum per multos tranquilla quieverit annos,
Sera capit Scoticæ *pignora perfidiæ.*
At ne forte manu infeli[c]i agitata rebelli
Concidat, externi militis addis opem.
Quin age, ſiqua latet Germano *ſanguine parta*
Ars, ſit & huc genii flumine ducta tui.
Imò & ab Hiſpanis *referat tua dextera bellis,*
Militiæ jactant quæ bene geſta ſuæ.
Sic olim, Angliacâ *meritos referente triumphos,*
Singula gens proprio Marte *vel* Arte *cadat.*

Guil. Sigiſwicke ſoc. Caio-Gon

TO THE RIGHT HONOURABLE HENRIE Lord MATRAVERS, Lord Lieutenant of his Majeſties forces in Norfolk and Norwich.

RIGHT HONOURABLE,

IT was the opinion of *Cato, Vel otii noſtri reddendam eſſe rationem*; In conformitie whereunto I have lately ſpent ſome idle houres in bringing noble *du Praiſſac* to ſpeak Engliſh. An excellent principall, as your Lordſhip (who are no ſtranger to the forrain tongues) will doubtleſſe judge it, though but meanly coppied. Such as it is your Lordſhips many and continued favours, do embolden me (in all humble ſubmiſſion) to preſent it to your Lordſhip, and with it the bounden and dutifull ſervice of

your Honours

devoted and obliged ſervant

JO. CRUSO.

TO THE GENTLEMEN OF
the *Artillerie* and *Militarie companies* in
this kingdome, and particularly of
that in *Norwich*.

GENTLEMEN,

I *Here preſent you with the excellencies of the Lord of* Praiſſac, *together with mine own imperfections. For the exerciſing of a* Company *in their* poſtures *and* motions, *and to diſpoſe that (or perhaps a* regiment) *into various forms of* battalia, *as there are divers* helps *extant (beſides your commendable* practice) *ſo doubtleſſe moſt of you have attained to very good perfection therein: yet I aſſure my ſelf, your vertuous emulations will not ſuffer you to ſtick there, but will kindle a* plus oultre *in your heroick breaſts; eſpecially when you ſhall here ſee that you have much more to do, and that a ſouldiers* Gammaut *goes farre beyond* E-la.

Theſe are times of action, *and require every true hearted ſubject to imploy his talent for his Majeſties ſervice and the publick ſafety. If theſe my poore endeavours may afford but the leaſt furtherance thereunto, and my good intentions receive but a courteous acceptance at your hands, I have my deſires; and reſt*

Your ſervant

I. C

The ſubject of the book.

The ſubject of this book is the Art of Warre, which hath two parts, Preparation and action.

Preparation there muſt be of men, money, inſtruments, and victuall.

The action is performed in the field or in fortreſſes.

That which is performed in the field, conſidereth the marching, encamping, and embattailing of the armie.

And that of fortreſſes conſidereth their fabrick, guard, expugning, defence, and releef.

The generall heads have their particular dependences, being the common practices which are daily obſerved; as the examples, the figures, and the chapters following do ſhew.

A table of the chapters.

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How

How a Prince is to prepare himself to make warre, to raise an armie, and the manner of marching.

Chap. I.

A Prince being resolved to make warre (be it offensive or defensive) ought to make such provision of men, instruments, money, and victuall, as he shall know to be necessary for his enterprise.

In making his provision of men, he is to choose such as are fit for counsell, for command, and for souldierie.

For his counsels, such whose age, prudence, experience, and study renders capable of such imployments.

For commanders in his armies, he is to choose men of authoritie, respect, prudence, experience, and good fortune. Each of them having made such proof of their courage, sufficiencie, and good successe in their severall charges, as it be apparently known to all men; chiefly choosing such as are born courageous, and are habituated in all the exercises of warre: as, to handle all sorts of armes, to know all manner of militarie motions, to form all sorts of battaillons, to range armies in battalia, to make them march, encamp, embattaile, to erect fortifications, to assault places of strength, and to defend them, to make the trenches, and place the batteries; briefly, that they know all the functions of warre.

For ſouldiers (whether they be Infanterie or Cavallrie) they ought to be elected, ſuch as are ſtrong, ſtout, and of fitting yeares, giving them ſuch armes as are moſt fitting for them; and diſciplining them.

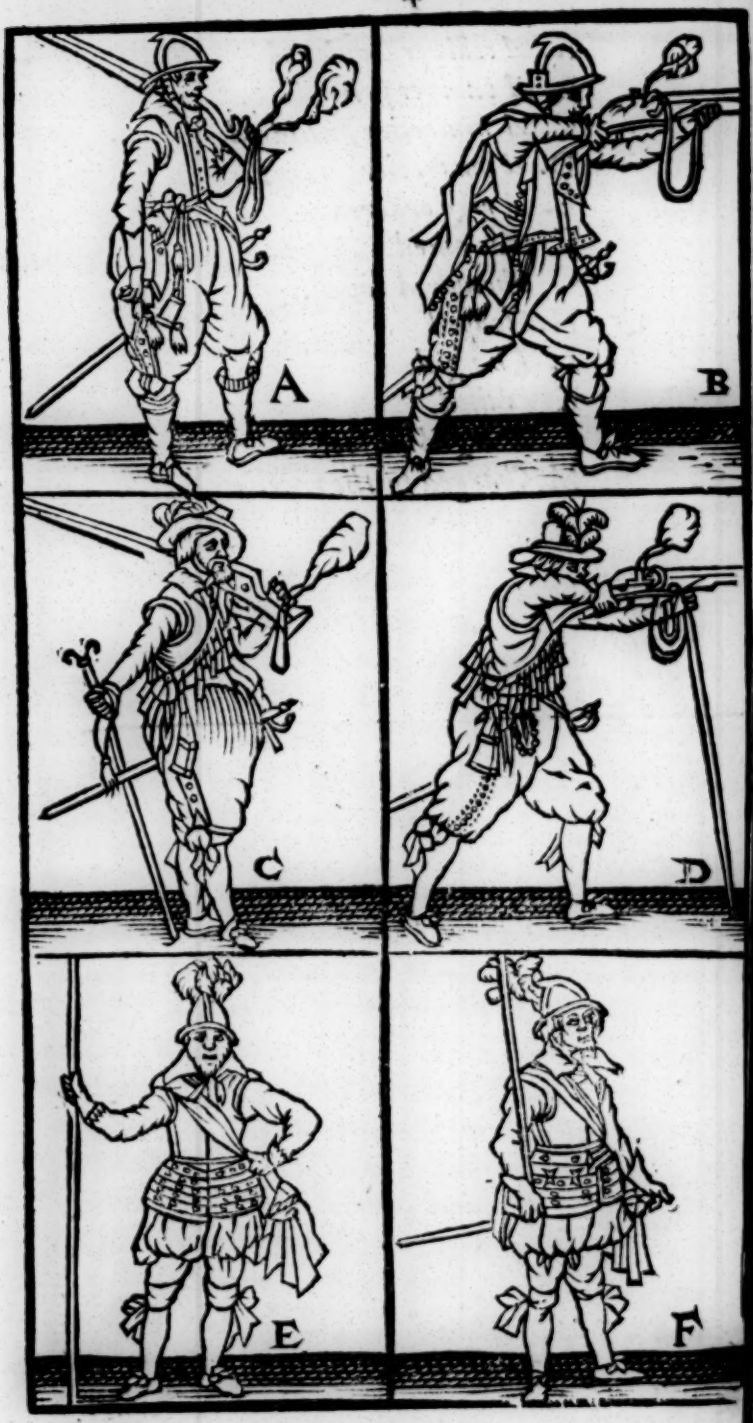
For the politick part, that they be ſober and continent in their ſuſtenance, abſtemious from play and women, modeſt in their ſpeeches, apparell, and all other actions.

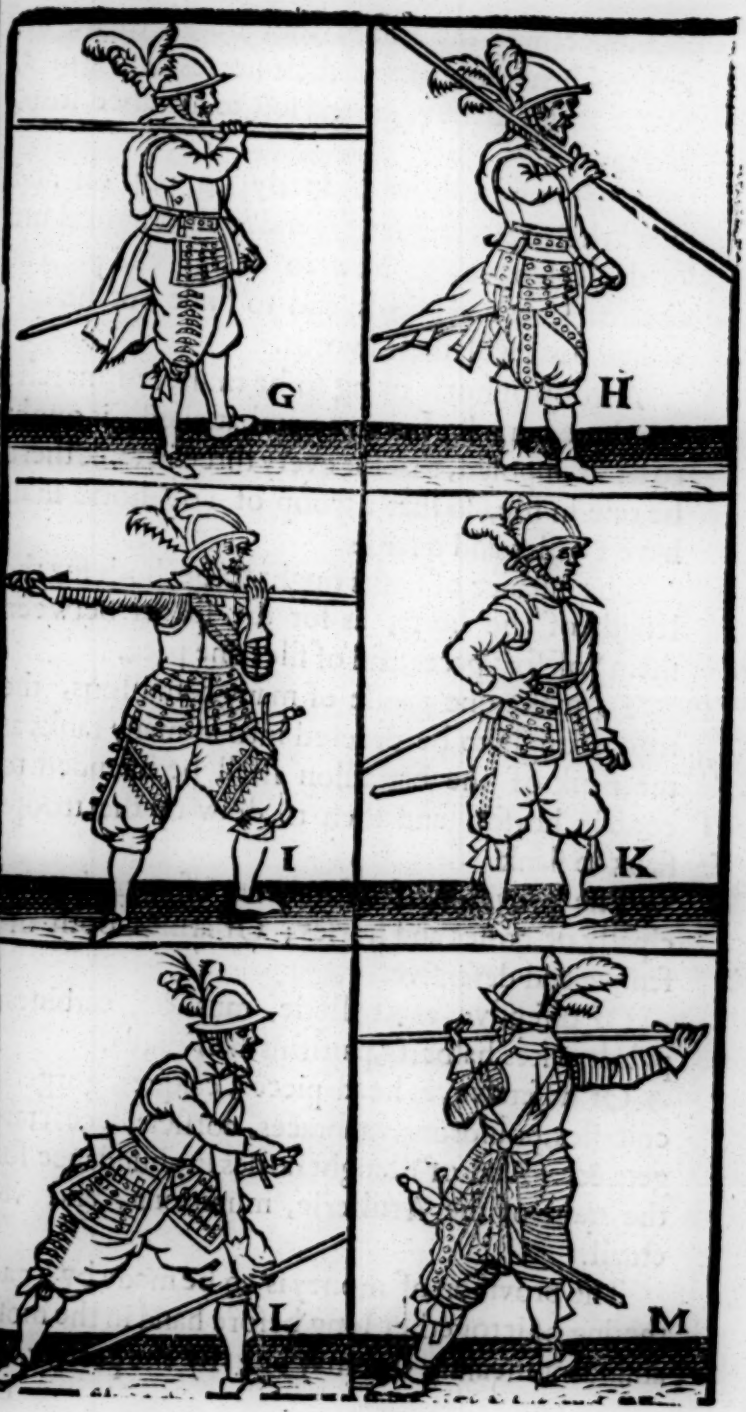
Concerning the militarie part, they are to be inſtructed in the uſe and exerciſe of the ſword, musket, and pike; and to be taught how to encamp, entrench, and make their huts, how to keep themſelves in order, and to be expert in all motions requiſite for the forming and ready dividing of ſuch forms as ſhall be deſired. To this end the Captains, Lieutenants, and Enſignes ought to be very carefull to inſtruct and diſcipline their ſouldiers.

The militarie diſcipline for the foot is this; The musketiers ought to be exact in the uſe of their musket and reſt together, to ſhoulder properly, to make ready, and preſent all after one and the ſame manner, whether it be upon entring into the guard, to paſſe a muſter, or to go to the charge; To give fire, either by themſelves, by files, by ranks, or in a volly. The pikes to ſhoulder (aſloap and levell) advance, trail, charge to front and rear; And both pikes and muskets, how to wear their ſwords, how to keep their ranks and files, to take their diſtances, both for muſter and fight; To uſe their motions, to the right, left, and rear; To double, open, cloſe, and to reduce both files and ranks; to countermarch, and wheel.

A. *A calliver ſhouldred.*
B. *A calliver firing.*
C. *A musketier ſhouldred.*
D. *A musketier firing.*
E. *A pike ordered.*
F. *Advanced.*
G. *Shouldred levell.*
H. *Sloaped.*
I. *Charged.*
K. *Trailed.*
L. *Charged at foot.*
M. *Charged to the rear.*

The French continued the calliver longer then other nations.


A
B
C
D
E
F


G
H
I
K
L
M

Concerning the horſe, they ought to be inſtructed how to manage their horſes and armes. Their horſes to the right and left, to advance, ſtop, retreat.

Their armes, how properly to put on and wear their defenſive ones; and to make good uſe of the offenſive, as how to charge and preſent their carbines and piſtols, and to finde out the unarmed parts with their ſwords.

A troop of horſe being to be muſtered, marcheth three in rank; but to be embattailed, it ought to be ſo diſpoſed, that for every three in rank there be one in file, ſo that a troop of 108 horſe ſhall have 18 files and 6 ranks.

The diſtance of ranks ought to be (both for the length of the horſe, as for the ſpaces between them) of ſix [a] paces, and of files one pace.

To make one groſſe of many battaillons, the troops ought to be ordered into ſo many ranks as the flank of the battaillon ſhall be intended to contain horſes, and then to draw up the troops flank to flank.

The proviſion of inſtruments of warre is principally of armes and horſes; Of armes both offenſive and defenſive.

Of offenſive, as Artillerie, muskets, carbines, piſtols, pikes, halberts, partiſans, half-pikes.

Of defenſive, as head-pieces, caſques, gorgets, cuiraſſes, pouldrons, vanbraces, corſlets, taces, targets, &c. And of draught horſes in abundance for the train of the Artillerie, munitions, and victuall.

The proviſion of money is to be made by a gathering of it together long before hand in the moſt abundant meaſure that may be; by the preſerving of

[a] *Paces here are to be underſtood ſteps, and not geometricall paces of 5 foot.*

of it diligently without imploying of it upon vain and unprofitable things; and by distributing of it where it shall be found necessarie; and in needfull things not to be niggardly.

The provision of victuall consisteth in the collection and duration of it, the conservation and distribution.

Having made all these preparations, and filled the magazines, there must be choice made of some citie, there to make the staple of amunition, to put the train of Artillerie in equippage, and there to take the muster of the armie, as well of the Infanterie and Cavallrie, as of the Artillerie; there also to put the armie into form of battaile, even as if they were that day to fight with the enemie.

The manner of ordering the armie for combat, is according to that which the Generall shall intend to execute; as to go and conquer a countrey, to releeve a place besieged, to give battaile, to march crosse through an enemies countrey, or to make a retreat.

If he purpose to conquer a countrey, he ought to know the estate of the same, as whether it be well peopled or not; whether he might be opposed by one or more armies, and what manner of ones; to know their alliances, and the means how to break them, or at least to hinder them from joyning together, if it be possible; to know the passages, their places of entrance and issuings out, the woods, mountains, straits, ports, keyes, bridges, havens; the situation of their cities and places of strength, their garrisons and munitions. He ought to be informed of the fertilitie of the coun-

countrey, to cauſe victuall to be carried thither if it be barren, or to diſcharge his armie of that train if it abound.

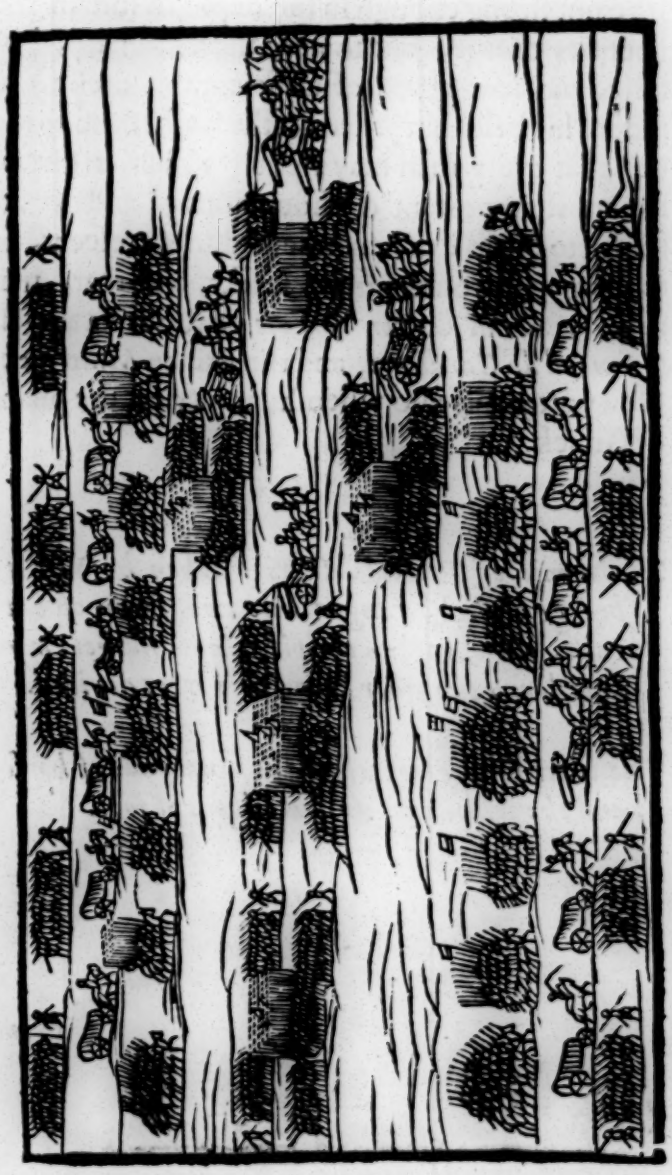
He is to have the plat of the countrey in a generall map, and alſo in many particular ones, to know the ſituation and diſtance of places, and whether the countrey be plain and even, or the contrary, and to judge by the capacity of the place what front he may give to his armie.

If his deſigne be to releeve ſome beſieged place, and to convey ſupplies within it, and (to effect that) deſireth to force a quarter, he ought not to ſpread out the wings of his armie, but to keep himſelf ſerried cloſe, as did Prince *Maurice* when he releeved Coevorden againſt the King of Spains army conducted by *Verdugo*; and the Marquis *Spinola*, when he went to releeve Groll.

The

The armie of the Marquis Spinola when he marched to releeve Groll.

Front.

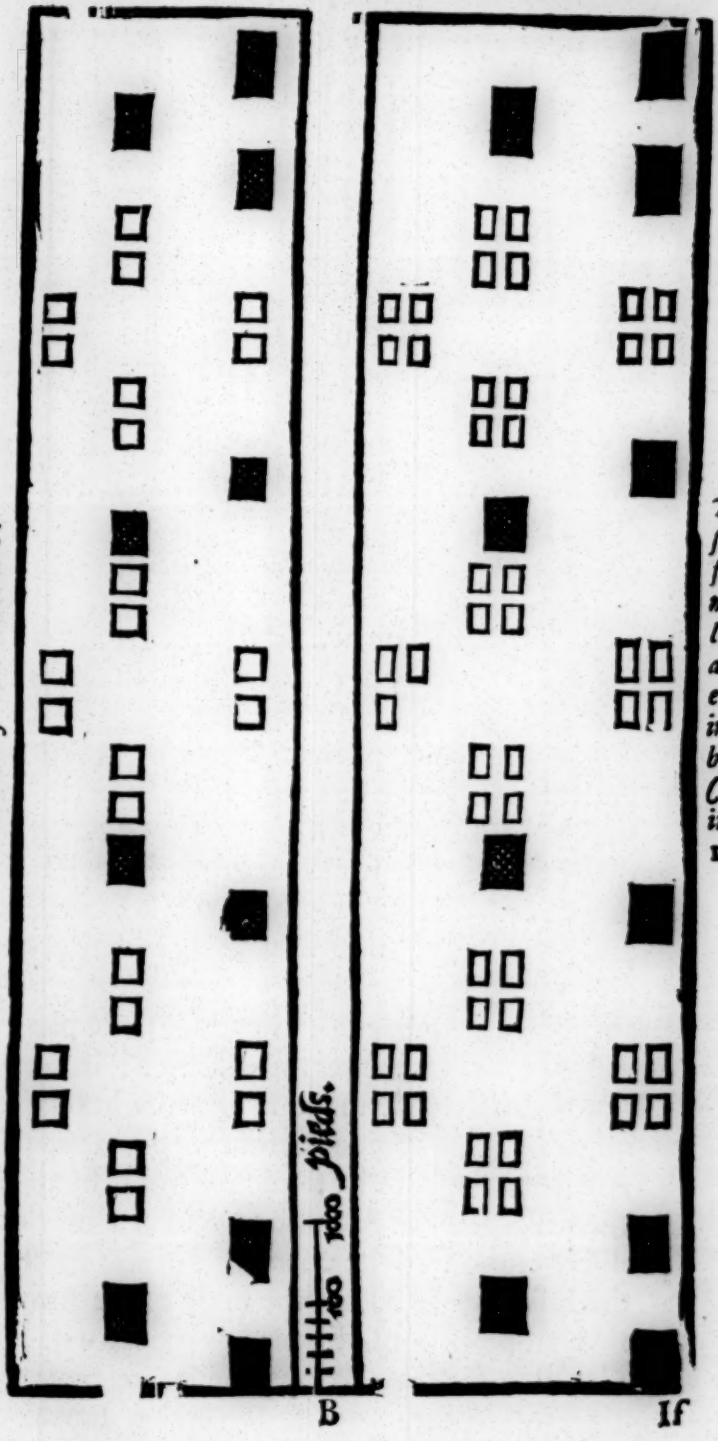


If he intend to deliver battaile to his enemie (the occaſion offering it ſelf, and the countrey being fit for it) he ought to extend the front of his armie as much as may be (yet not ſo much that it be not ſtrong enough in the depth to ſuſtain the enemies charge, but to have the van-guard, battaile, and rear-guard of ſufficient thickneſſe) to hinder his being ſurpriſed on the flanks, and to the end that every man may fight (which is one of the moſt important conſiderations) and to attempt to encloſe the enemie within a creſcent, ſo to charge him on the front, flanks, and rear, if it may be, as did *Gaſton de Fois* at Ravenna againſt *Raimond de Cardonne*, and the Prince *Maurice* at Newport; and alſo when he traverſed the plains of Gulick.

The armie of Prince Maurice when he went to beſiege Gulick, ranged into two forms of battaile, the one when the pikes and muskets were joyned, and the other when they were divided.

The black ſquares repreſent the ſquadrons of horſe, and the white ones the battaillons of foot.

Front



You may see this figure more largely and more exactly in my book of Cavallry, in figure 16.

If he desire to cause his Army to traverse or march through an enemies countrey, he ought alwayes to cause them to be quartered together in one body, without disuniting of any part, and to march in Battalia, making choice of open places (free from woods) and such as are plain and even, securing his quarters, and carrying munitions with him, requisite for the time of his passing through: for it is a very hard matter to lead an armie through an enemies countrey, especially if it be divided by rivers, covered with woods, and mountainous, and if there be in it places of strength, and a mean armie to defend it self; for it alwayes molests you, cuts off the passage of victuall, hindreth your armie in their march, alwayes troubleth them on the Flanks or Reare, waites upon advantages, seeks occasions of surprising, and continually layeth ambushes.

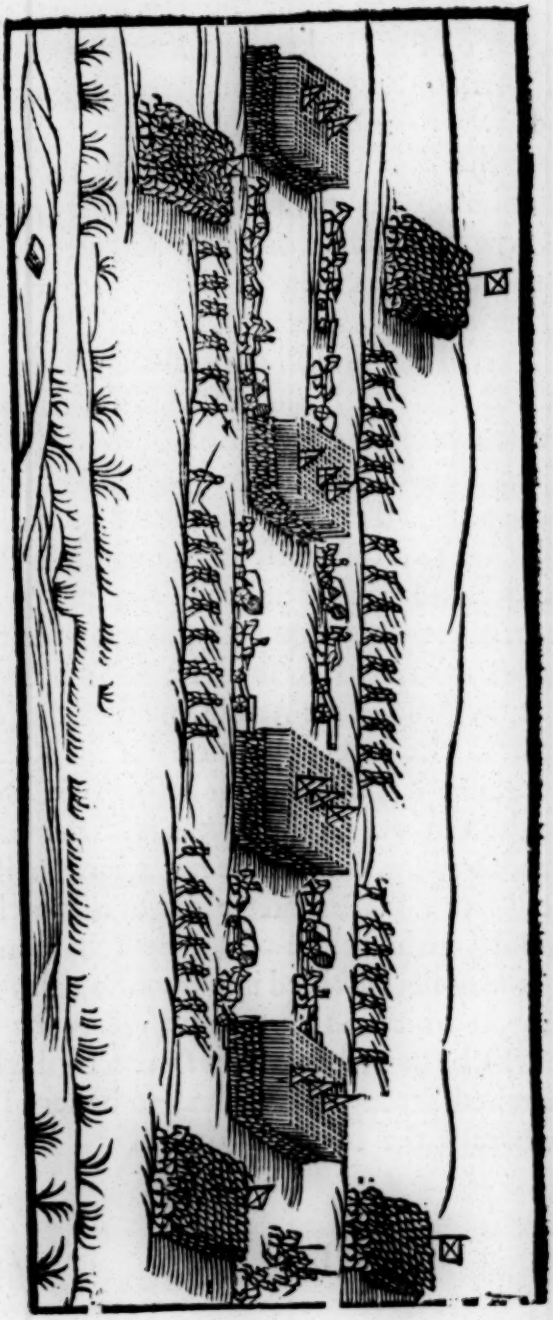
But after what manner soever your Army be embattailed, a care you must have that all hands may be brought to fight, and that your Army may deliver combat at least three times, which it shall doe if it be divided into Van, Battaile, and Reare. Let the horse be so disposed as they may alwayes second the foot, and that in such sort, as finding themselves disordered, they may finde place to rally themselves under their shelter; having no Battaillon behinde them so near, whereby they might be again routed after such a disorder. The Artillerie ought to be so placed, that it hinder not the passage of the Battaillons, & that it may easily discover those of the enemie. For the most part the Infanterie is within the body of the Armie, in severall Battaillons, disposed checquer wise: the Cavallrie on their Wings and Reare in severall Squadrons,

Squadrons, and the Artillerie according to the convenience of the place, on the Front of the Armie, or on the Flanks of the Battaillons.

The Armie having been muſtered at the place of rendez-vous, it doth uſually march away in Battalia, to the place of their encamping that night (if the countrey will permit it) that ſo they may be taught how to march in order of Battaile; which if it cannot do by reaſon of the unevenneſſe of the countrie, the Pioners muſt be cauſed to make many ſeverall wayes, filling the ditches, breaking down hedges, and laying bridges of boats or otherwiſe over rivers and brooks.

In the middle-way the Artillerie, Munition, and Baggage ſhall march; on the wings of theſe one part of the Infanterie is to march in their long order, either three or five in Ranke; on the Flank of theſe Foot ſome Carabines; the two third parts of Cuiraſſiers ſhall be in two Squadrons at the head of the Armie, and the other one third part in the like diſpoſition on the Reare; the Harquebuſiers ſhall march before the Cuiraſſiers in the Front of all the Armie with the Carabines and Dragons, ſaving ſome few which ſhall be on the Reare; the Infanterie ought to march in the middle, in the forme of double Battaillons as much as may be, divided into Van, Battaile, and Reare: all which will be more cleare by the forme which the Marquis *Spinola* obſerved when he marched through Freeſeland to beſiege Lingen, whereof the figure followeth.

Front.



If the enemie be neare to the place where the armie is to arive, the Marſhall of the Field (having choſen a fit place for the field of combat) gives order for the placing of the Artillerie, diſparteth the quarters and places of the Regiments and Munitions, cauſeth all the camp to be entrenched round about according to the art of fortification. To this end he muſt endeavour to lodge at a ſeaſonable houre, that ſo he may have time to make his retrenchments, to divide the quarters, to place the guards, to ſend out to forrage, to cauſe the huts to be made, to diſcover the actions of the enemie ; and to prevent a thouſand inconveniences which the night produceth ; diſpoſing all things according to the place and time.

Of encamping the Armie.

Chap. II.

AN Army is quartered in the field or in ſome village : in the field when the enemie is at hand, then muſt it be quartered in Battaillons, as if every houre there were occaſion of combat. Alſo, the lodging in the field is when you lay any ſiege, or when the infection compells you to flee the places of ſhelter, or when the countrey is waſted and without houſes.

The quartering in villages is when the enemie is farre off, ſo as you may have time to put the Armie into form of Battaile in the place of Alarm, before he can be upon your jack.

Whether the encamping be in the field or in the villages, it muſt be commodious and aſſured. It will be commodious if there be abundance of

water, wood, forrage, and capacitie of roome convenient to lodge the whole armie, and to make the Alarme-place.

It will be assured (being in the field) by fortifying the camp round about, by causing it to be well guarded by good Corps-du-guards, and Sentinels within, and Sentinell-perdues without, having Redouts round about, if the enemie be to be feared, or that he be near. *See the Leaguer of Prince Maurice before Sluys, and before Grave*, Fol. 87, 88.

It will be assured in the villages when the Alarme-place shall front the enemy, being eminent and commanding the ground round about it, capable to range the whole armie into order of battaile, fortified by art and nature, commodious for the advenues and sallies without confusion of the troops; That it be not assaultable without great disadvantage to the enemie, being near to the quarters, well defended by Artillerie, and well secured by Corps-du-guards, aswell of Infanterie as Cavallrie.

Concerning the quarters, they must be difficult to force and to assault (at lest unawares) facile to be releeved, and therefore near together, fortified, retrenched, and well guarded.

So then, all that is to be considered about the lodging of an Armie which is to be encamped for a long time (for, for one night it is onely requisite to make choice of places advantagious and such as are strong by nature, or to defend them by waggons or other meanes of encloſing the camp) consisteth in the commoditie of six things, namely, victuall, water, forrage, wood, situation, and encloſures of the field.

Having

Having regard to the certaintie of victuall and munitions by not adventuring too farre of; and leaving none of the enemies towns on the Flanks which might intercept or cut off your way; seeking out the commoditie of rivers, to be served of water to drink, for conveyance, or to impale with waggons, and to secure the one Flank of the Armie; it being impossible to be without them, and chiefly good ones.

For these reasons mountainous places are to be avoided, and also valleys; the one for the barrennesse, the other for the badnesse and discommoditie of the filthy pooles, and for the bad aire which they cause, being crude and foggie.

Regard must be had of the abundance, commoditie, and certaintie of forrage; for the horse make an incredible waste, besides that much is required for the Souldiers to lie upon and to cover their huts with.

Good store of wood must be had for fires in the Corps-du-guards, and to build huts.

A care must be had that the place where you intend to encamp be smooth, plain, and sandy (if it may be) farre from any place that commandeth it, or if there be any, it must be seased upon and taken in within the retrenchment, to discover and command the champain.

If there be any wood near, you ought to make use of it and guard it, somewhat enlarging the retrenchment, and leaving roome between both, to meet with ambushes which the enemie might lay within it.

The forme of a retrenchment of an Armie is usually square, and the sides thereof ought to be fortified by Tenailles, to defend the one by the

other, and ſo to be diſpoſed of, as in giving fire by night thoſe of the Armie may not hurt each other; making them more or leſſe ſtrong, as the enemie is more or leſſe to be feared.

Touching the particular things which concern the diſparting of the lodgings within the encloſure of the camp, theſe things are to be obſerved;

The retrenchement ought to be in breadth and depth two fadomes, and the parapet one fadom in height. Round about the inſide of the retrenchement there muſt be a ſpace left of [a]40 or 45 fadomes broad, which is called the Alarm-place, which muſt be ſpacious enough to contain the whole Armie in Battalia.

[a] *The proportion generally obſerved is 200 foot.*

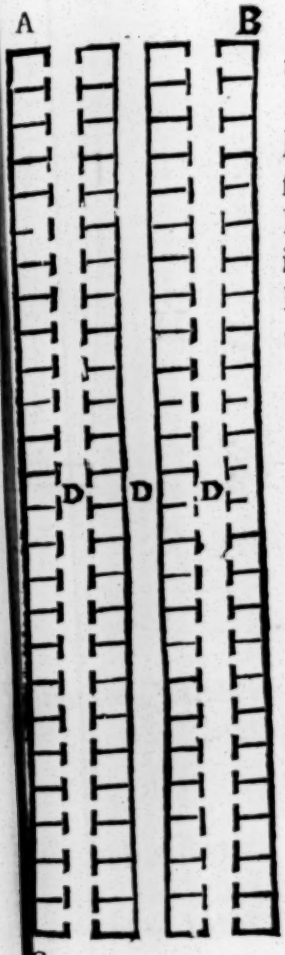
Then follow the quarters of 300 foot [b] deep, which muſt be divided (for the making of the lodgings) after this manner;

[b] *The Authour ſaith 300 foot broad, but that is a miſtake.*

For a Companie of 200 footmen there muſt be 56 foot in Front, and 200 in depth, to make 4 rowes of huts, 25 in each row: between which there muſt be 3 ſtreets of 8 foot broad. Every hut hath 8 foot ſquare to lodge 2 ſouldiers. All the doores of them open upon 2 ſtreets, and anſwer juſt over againſt each other.

The quartering of a Foot-companie.

A.B. *The Front of a Companie, is of foure huts.*
A.C. *The depth, is of 25 huts*
D. *The ſtreets between the huts.*

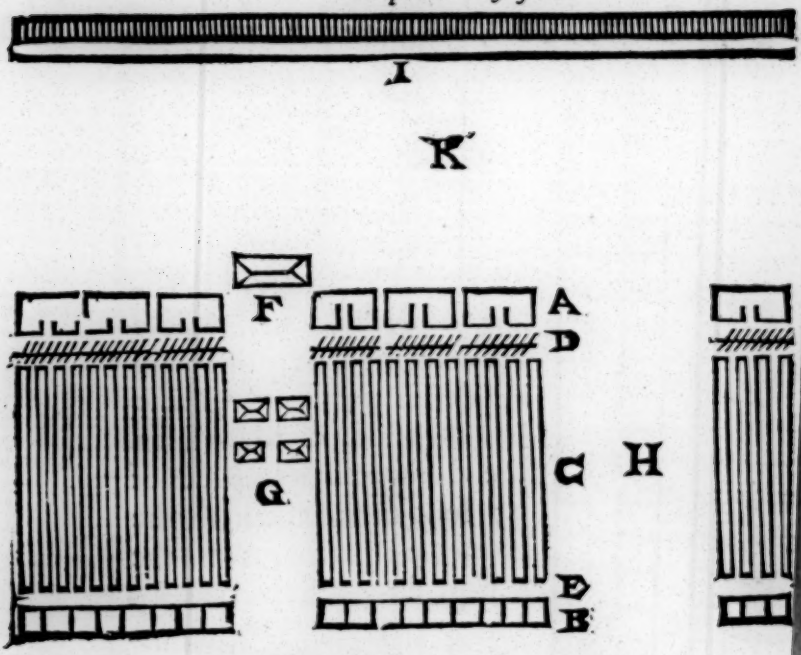


Before the Companies are the Captaines lodgings, every of them at the head of his own Companie, poſſeſſing in breadth the whole Front of the Companie, and in depth 25 foot. Theſe lodgings are divided from the Companies by a ſtreet of 35 foot broad, where the Armes are placed, as alſo the Corps-du-guards, and Colours. Behinde the Companies are the Sutlers huts, containing 20 foot in depth, and theſe are ſeparated from the Companies by a ſtreet of 20 foot broad. The Companies are divided from each other by a ſtreet of 8 foot breadth

In the middle of the Regiment, there muſt be a place of 80 foot breadth, in Front of which the Colonell is to be lodged, and more inward, the Sergeant Major, Provoſt, and all the Officers of the Regiment. The ſpace between each Regiment muſt be 200 or 300 foot.

The

The quartering of a Regiment of six Companies of foot.



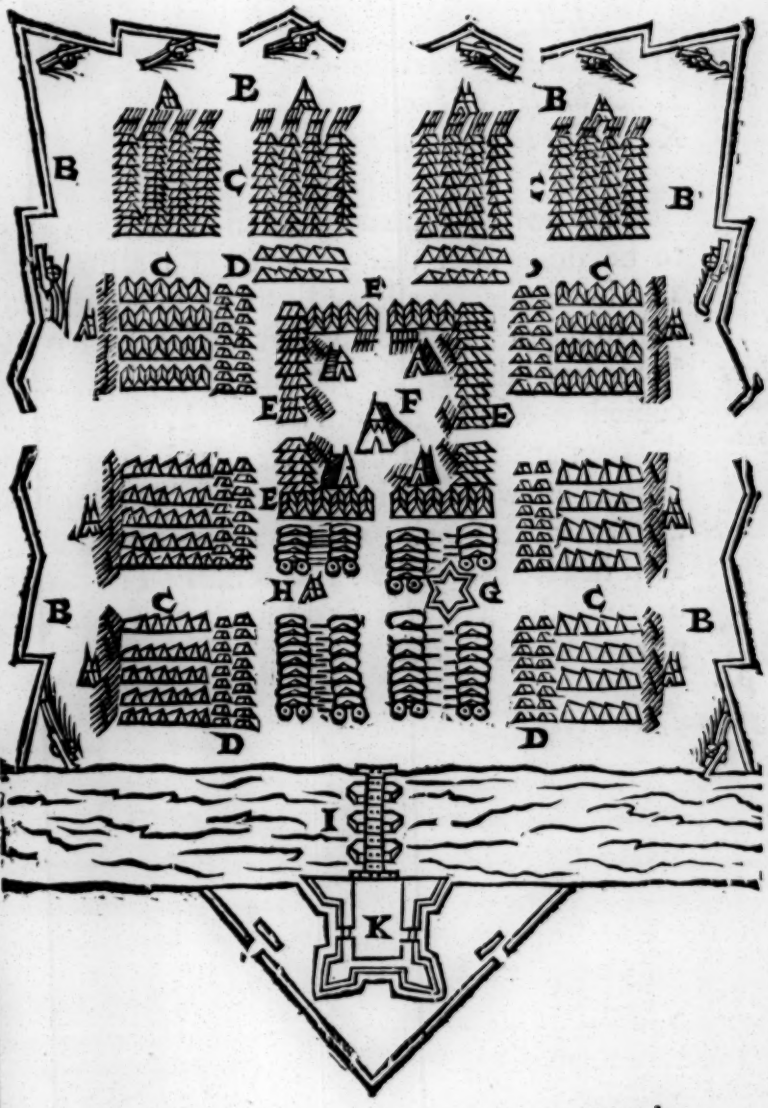
The placing of the Captaines tents at the head of their Companies, is now left off. And they are now in the Reare of them in E. and before the Sutlers: partly for that by this means the Captains can better take notice of, and so remedy the disorders which happen in the Sutlers huts: and that so the accesse to the Alarme-place may be the freer, for that the Captaines tents (taking up the ground before) hindred it.

I. *The retrenchment of the camp.*
K. *The Alarme-place.*
A.B. *The depth of the quarter.*
A. *The Captains lodgings.*
D. *A street between them and their Companies where the Pikes are placed.*
C. *The Companies.*
B. *The Suttlers.*
E. *The street between the Companies and Sutlers.*
G. *A void place in the middle of the Regiment.*
F. *The Colonels lodging.*
H. *A space between the Regiments.*

When

When the Infanterie is quartered alone without Cavallrie, it is disposed as the figure following sheweth.

The Infanterie quartered on the side of a river.



A. *The*

A. *The field of battaile.*
B. *The Alarme-place.*
C. *The huts of the quarters.*
D. *The Sutlers.*
E. *The guards of the Generall.*
F. *The Generals lodgings.*
G. *The quarter for the powder and train of Artillerie.*
H. *The waggons for victuall.*
I. *A bridge of boats.*
K. *A fort to guard the bridge.*

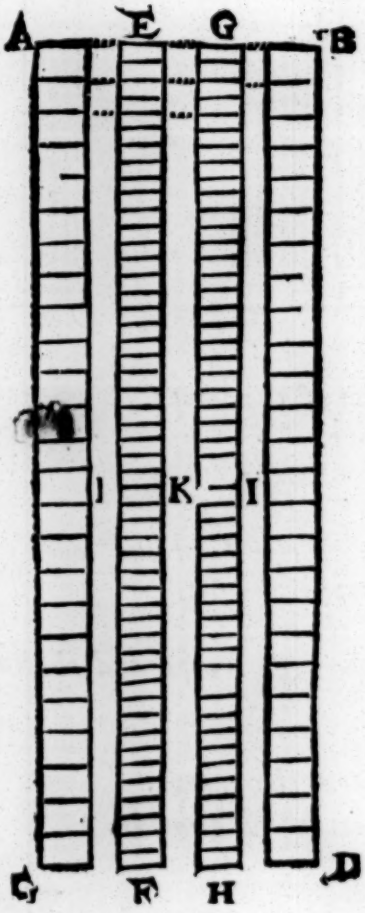
If the horſe be quartered amongſt the foot, it is to be done after this manner. To a troop of 100 horſe muſt be allowed 70 foot in Front, and 200 in depth. To two horſemen 8 foot of length [a] 12 in breadth, to make one hut. Every horſe occupieth 4 foot in breadth and 10 in depth. All the men are lodged in 2 liles, and ſo are the horſes. Between the huts and the ſtables there is a ſtreet of [b] 8 foot broad. The horſes ſtand with their heads towards their riders huts The ſtreet between the ſtables is [c] 10 foot broad, for the paſſage of the horſes.

[a] *Others allow but 10 foot.*
[b] *Some allow but 5 foot.*
[c] *13 foot, as ſome ſay. For this you may ſee my book of Cavallrie in figure 4.*

The

The quartering of a troop of 100 *horſe.*

A. B. *The Front of the troop.*
A. C. *The depth.*
A. C. *and* B. D. *The ſouldiers huts,* 25 *in each file.*
E. F. *and* G. H. *The* 2 *rowes of ſtables, each of them for* 50 *horſes.*
K. *Is the ſtreet between the ſtables.*
I. I. *Are the ſtreets between the huts and the ſtables.*

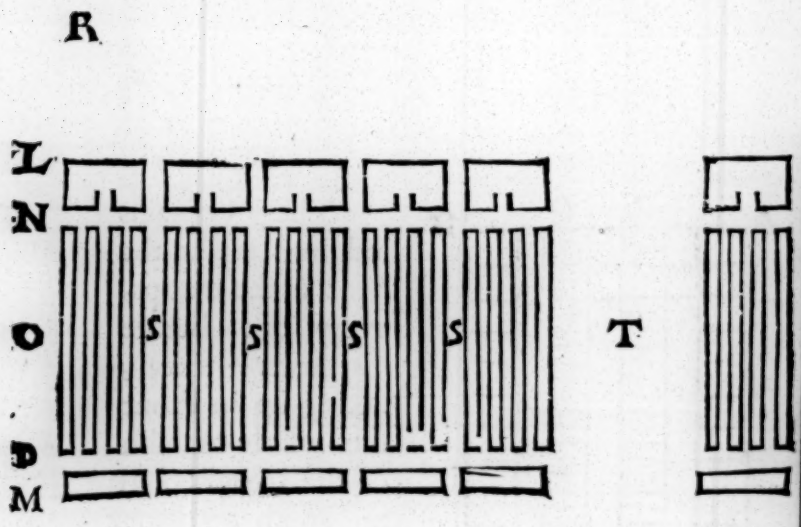


The Captains lodgings are at the head of the troops, every one before his own troop, taking up in Front the whole breadth of the troops, and in depth 40 foot. Betweene theſe lodgings and the troops there is a ſtreet of 20 foot breadth. Behinde the troops are the Sutlers huts, of 20 foot deep, ſeparated from the troops, by a ſtreet of 20 foot broad.

The diſtance betweene each troop is 20 foot.

The

The quartering of a Regiment of five troops of horse.



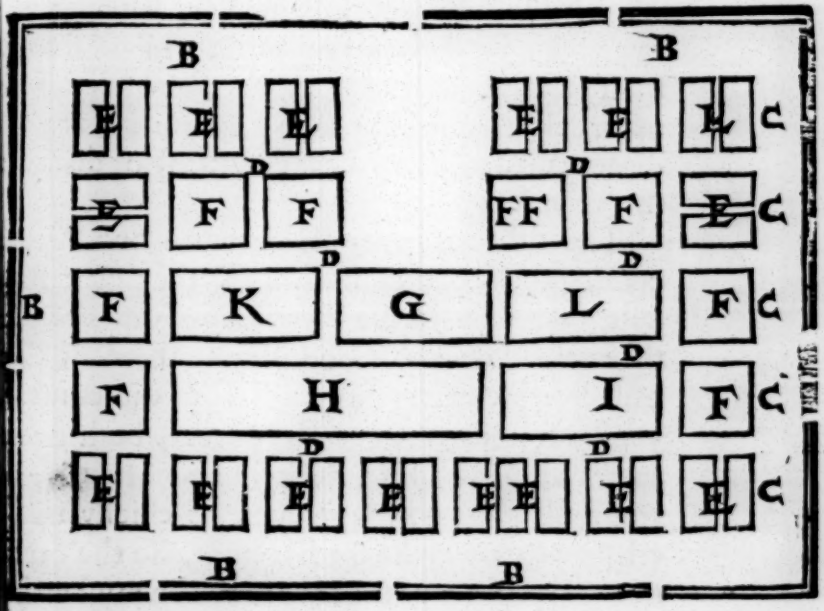
Q. *The retrenchment of the campe.*
R. *The Alarme-place.*
L.M. *The depth of the quarter.*
L. *The Captains lodgings.*
N. *The ſtreet between the Captains lodgings, and their troops.*
O. *The lodgings of the trocps.*
P. *The ſtreet between the troops and the Sutlers.*
M. *The Sutlers huts.*
S. *The ſtreets between the troops.*
T. *The ſpace between the Regiments.*

When

When the horſe and foot encamp together, they are diſpoſed of as the figure following demonſtrateth.

It ſeldome happeneth that they are quartered together, by reaſon of the great annoyance which the Cavallrie bringeth to the Infanterie.

A quarter of Infanterie and Cavallrie, fronting every way.



B. *The Alarme-place.*
C. *The quarters.*
D. *The ſtreets between the quarters.*
E, *The Regiments of foot.*
F. *The Regiments of horſe.*
F. F. *The Generall of horſe.*
G. *The Generall of the Armie.*
H. *The quarter for the Artillery, and the Generall thereof.*

I. *The*

I. *The quarter for the Commiſsarie Generall of the victuall, and his train.*
K. *Lodgings for Strangers.*
L. *The Market and Shambles.*

Of embattailing the Armie.

Chap. III.

THere be two kindes of occaſions of giving battaile; the one is particular, hapning betweeen ſmall troops, as encounters which (for the moſt part) are given by accident, and ſometimes upon deliberation; alſo ſuch skirmiſhes as are ordinarily uſed to draw out, entertain, or diſcover the enemie.

The other is generall, as when one Armie coming to encounter the other, they give Battaile; wherein for the diverſities of times before the combat, during it, and after it, there muſt be had divers conſiderations. Before the combat you muſt know the enemies forces, both horſe and foot, as alſo his Artillerie and Munitions; you muſt alſo know whereunto he chiefly truſteth, in what order he uſeth to fight, alſo the ſituation and paſſages of the countrey. You muſt make diligent diſcoverie of his deſignes and actions by your own ſpies, or the enemies, being corrupted with money or promiſes.

You muſt attempt to divide his forces, to raiſe jealouſies and diffidences between his chiefs, or between them and their officers, to incite his ſouldiers to mutinie.

You muſt ſtrive to ſeize upon the moſt advantageous ground to range the Armie into Battalia, having

having regard to the winde to avoid the duſt and ſmoak, and to drive it into their eyes; and to the ſunne, that you be not dazled: directing your ſelf according to the place, and the number of your own and the enemies forces.

The ſouldiers muſt be deprived of all hope of ſaving themſelves by flight, and muſt be brought to a diſpoſition to fight courageouſly; propounding to them the glorie, the bootie, the recompenſe, and the neceſſitie.

The order which muſt be obſerved in ranging the Armie for [a] combat hath been ſhewed in the firſt chapter, being the ſame as the march in battalia.

[a] *In my book of Cavallrie (before mentioned) you may ſee divers formes of battaile in figure 8, 9, 10, &c.*

The Artillerie muſt play ſo ſoon as they begin to diſcover the battaillons of the enemie, making the batterie fitly and ſpeedily, to diſorder and ſcatter them before they come to give battaile.

Whileſt the Armie ſtands ranged in battalia, expecting the ſignall for combat, the Marſhalls of the field ought to ride before the Van, to cauſe them to advance when the fight ſhall begin, according to the Generalls order, and to command the battaillons to joyne and charge the enemie, or to receive his charge according to occurrences.

The Generall of the Armie by his diligence ought to be as the ſoul in the body throughout all the members; alwayes obſerving the countenance of the enemie, to make his men fight to purpoſe; aſſiſting the broken battaillons by freſh ones, or by ſquadrons, and ordering thoſe which (having been diſbanded) ſhall rally again, to ſend them to

the combat to releeve their fellows. And because such as have been beaten will hardly return to fight again, you must not trust too much to them.

As soon as you be within reach of the Canon, you must go on directly upon the enemie, (unlesse you be sheltered from his Artillerie) by this means your souldiers are encouraged, you avoid the danger of the enemies Canon, and you leave behinde you the place where your Armie stood ranged, which ground will serve to rally and order the Battaillons which shall happen to be routed. You must not give on so hastily, as that thereby the Battaillons be disordered; and on the other-side you are to use a marching pace untill you come within distance of a Pistoll-shot, but then to double your pace and to charge furiously, the Pikes being close serried, and the Musket continually playing on the Flanks, having certain Targetteers in Front which may shelter the Battaillon, and disorder the enemies Pikes.

You must give a sufficient Front to the Battaillons, that so they may overwing the enemie, and charge him in Front and Flank, observing on which part the enemie giveth the most violent assault, and thither to send the troops of Reserve as also, where he is weakest, that there he may be the more easily routed; dissembling and concealing all sinister accidents; and whatsoever proves prosperous, to cause that to be published aloud, for the raising of their spirits which happily might be become heartlesse, either by over much labour, or by the rumour of some disaster propounding to them the faintnesse of the enemie, the death of his Commanders, the flight

his troops, the ſpoil, the honour of the victorie, and the great bootie; Sending the orders and commands by Officers and perſons known, and not from hand to hand by *paſſe parolle*.

After the combat, either you are vanquiſher or vanquiſhed: If you be vanquiſher, and have no cauſe to feare the enemie any more, as being not able to rally himſelf, either you content your ſelf with the victorie, or you attempt farther to conquer.

If you reſt content with this victorie, God is ſolemnly to be praiſed, the ſouldiers are to be reduced, commended, and recompenced, principally the Chiefs and ſuch as have performed any ſignall acts, ſharing out the ſpoil amongſt them according to their merits, giving order that the priſoners be truſtily kept and courteouſly uſed, cauſing the hurt to be carefully cured and the dead buried.

If you attempt to conquer the enemies countrey, you are to publiſh the victorie, for that will cauſe his confederates to ſhrink from their alliance, it will affright your enemie, and will make the Neuters to declare themſelves for the victour; it will keep your confederates faithfull and conſtant, your ſubjects obedient, and will procure favour from all men. Then the Armie muſt be ſupplied with men and munitions, the enemies garriſons muſt be ſummoned, recompenſing ſuch as ſhall yeeld the places within their cuſtody, dealing rigorouſly with ſuch as ſhall be headſtrong, gaining the great ones of the countrey by money, eſtates, and honour, attempting to ſeize upon the advenues and paſſages, and to leave nothing at your back which might hinder the paſſage of

your munitions and victuall. If you be vanquiſhed, either the enemie gives you time to retreat, or elſe he purſues you with all his forces. If he give you time, you muſt gather together all what poſſibly you can of your broken and ſcattered men, making your retreat reſolutely and honourably, and ſhewing your ſelf in the field again ſo ſoon as may be with the greateſt number of ſouldiers that can be gotten, to make head again againſt the enemie, to oppoſe his deſignes, to diſquiet and moleſt his actions, to work his confederates to oppoſe him, to divert and divide his forces, to fortifie the paſſages, to provide and furniſh your frontier places with victuall, munition, and garriſons.

If you be purſued with extremitie, you muſt retreat in the beſt order you ſhall be able, making it appear you are not vanquiſhed in your courage, though you be ſo in your fortunes; cauſing all your countrey to take armes, and that ſuch as ſhall be in armes do preſent themſelves at the paſſage to hinder the enemies entrance, breaking down the bridges and landing-places of rivers, cutting of the high-wayes, and felling of trees to lay a croſſe the high-wayes, breaking down the ſluces, and drowning the countrey, if it be poſſible, aſſuring your ſelf of the fidelitie of your cities and ſubjects, the one by forts, cittadels and garriſons; the other by hoſtages, offices and benefits.

Of the building of forts.

Chap. IIII.

Before the fortifying of any place, conſideration muſt be had of the ſituation: for if it be on a mountain which is all a rock, and that the place comprehendeth all the top, it will be difficult to approach, the flanks will be ſecured, it will be free from mines and command, it will eaſily diſcover round about, it will do horrible execution, and will be wholeſome both for the inhabitants and for the munitions. But ſuch a place hath uſually theſe diſcommodities, want of water and earth, hard to be retrenched, eaſie to be quickly blocked up, and the paſſages and advenues for the releeving of it, eaſie to be cut off.

If it be on a mountain which is not a rock, it will be ſubject to mining, the trenches of approach will be eaſily undermined, and it will have almoſt all the diſcommodities of the place above ſaid; but it will alſo have the advantage of ſtore of earth, and by that means it may eaſily be retrenched.

If the place be ſeated on a mountain which hath one or more advenues which command it, ſuch place will be eaſie to be aſſailed and battered from thoſe advenues.

If the place be mooriſh, the approaches are difficult, but the diſcommodities are great for them within it; for they are ſoon ſhut up, their ſallies are difficult and dangerous, the place is unwholeſome for the inhabitants, the

munitions are ſoon corrupted, and it is hard to be releeved.

If the place be on a plain, but commanded by one or more hills, it will have an infinite number of diſcommodities, and almoſt no conveniences.

If it be in a plain which is ſandy, the works which there ſhall be made will hardly be worth any thing.

But if it be on a plain champain, and levell on all ſides, the earth being fat and ſtrong, it will be eaſie there to fortifie, and to prevent the diſcommodities, having very advantageous conveniences.

But whatſoever the ſituation be, if you intend there to fortifie, you muſt firſt calculate whether your means be ſufficient, whether the ſeaſon be fitting, whether you have a ſufficient number of workmen and tooles, time enough to finiſh it before the ſeaſon change, or the enemie can come upon you; whether you have ſouldiers enough to guard it, ſufficient Artillerie to defend it, munition enough for the ſouldiers and Artillerie, victuall ſufficient for the men, and fodder for the horſes, ſuccours ſo near as that they may arrive within ſuch time as it may be conceived the fort may be maintained againſt the violence of the enemie.

If all theſe things do favour you, you may boldly fall to work, having regard firſt to the matter, and ſecondly to the forme.

Concerning the matter, if you have the commoditie of ſtone, brick, and chaulk, you muſt line all the works of the curtains, bullworks, and counterſcarps with good and ſtrong ſloapings, after this manner; thoſe of the curtain and counterſcarp

terſcarp have a fourth part of the height for their ſloap, and thoſe of the faces of the Bullworks a third.

The faces of the Bullworks muſt have ſpurres, ten foot diſtant from each other, of three foot thick and 25 foot long, the ſaid ſpurres being ſtrongly bound in with the wall, which muſt be built in arches underpropped 6 foot without the foundations onely on the ſpurres.

If you have onely earth, there muſt be ſuch a ſloap given to the works, according as they are ſtrong or ſandy, ordinarily of 5 foot one. Such works muſt be well furniſhed with palliſadoes, and environed with water, for they are ſubject to ſurpriſes, becauſe the ſhowers of rain and froſts make them moulder away.

Touching the forme, if it be regular (which is when it hath the ſides equall) ſuch as the fortification of one face is, ſuch are all the reſt. But if it be irregular (which is when the ſides be unequall, as all cities are which are repaired) the fortification on all parts muſt be diſagreeing. But what forme ſoever it hath you muſt obſerve the rules following as much as may be, and labour to make it equally ſtrong on all ſides.

Rules of Fortification.

That the angles or points of the Bullworks (which are called angles flanked) be made as great and blunt as may be; for the more obtuſe the flanked angles be, the better; and the angles flanking are the more ſharp.

A. B. C. *The angle flanked.*

B. C. D. *The angle flanking.*

That the ſhoulders of the Bullworks be made

massie enough to resist the violence of the enemie, and to hinder him from ruining the flanks which they cover; and long enough to cover (in sight) at least half of the flank of the casemat, when you behold it from the point of the counterscarp of the opposite Bullwork. The casemat must have of breadth the moytie of the thickness of the shoulder, and the plain of it of 2 foot high above the plain of the drie moat, or of the surface of the water. The line of the thickness of the shoulder, and of the breadth of the casemat, is called the line of the flank, and the longer it is, the better: provided that it bring no discommoditie to the other parts.

F. G. *The thickness of the shoulder.*
F. E *The breadth of the casemat.*
E G *The line of the flank.*

That every face of a fortresse must have two flanks, that so it may defend it self both on the front and on the sides, and the one by the other.

O. *Is the center of the Bullwork.*
O.P, *A face of the fort.*
H. *Is one flank.*
I. *Is the other flank.*

That the lines of defence be not so long, that they be without the reach of your shot; nor so short that the enemie (being lodged on the counterscarp) be able with his musket shot to beat yours out of your casemats.

I. B. *and* H. D. *are the lines of defence.*

That the Bullworks be large and hollow, capable of divers retrenchements, that there may be formed large flanks, and that they may contain good store of souldiers: for the hollow room i

the

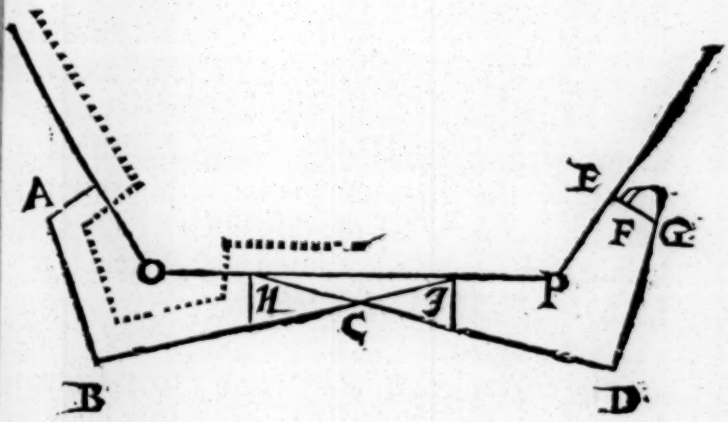
the place appointed to fight in, and to bear retrenchements.

O. *and* P. *repreſent the places of the Bullworks.*

The ſallie-ports ought to be placed between the ſhoulders of the Bullworks, and the caſemats.

F. *The ſally-port.*

A. B. H.B. I.D. *and* D.G. *the faces of the Bullworks.*



That the faces of the Bullworks and the curtains be ſunk within the moat to the upper line, and that upon this line there be a parapet of 8 foot height and [a] 3 foot thickneſſe. Then let the way for the rounds be 2 fathom broad (therein being comprehended the 2 foot-banks of the parapet) aſwell of the Bullworks as the curtains.

S. *The upper line or ſuperficies.*

T. *The parapet of the curtain.*

V. *The way for the rounds.*

X. *The foot-banks.*

[a] *Three foot for the thickneſſe of the parapet is (ſurely) farre too little. Maroloys and others ſay 20 foot. And the Authour himſelf ſayes from 15 to 20 foot, in the words following.*

That

That the rampart of the Bullworks be 15 foot high on the plain of the citie, and that of the curtain twenty five, without reckoning the parapet: briefly that it be so high, as it may keep the houses from being battered and ruined. Let their parapets be from 15 to 20 foot thick, and 8 foot high.

Y. Z. *The height of the rampart of the Bullworks.*

Z. θ. *The thicknesse of the parapet.*

The ditches must be from 12 to 16 fathome broad, and from 5 to 6 deep, beneath the covert way (being drie) if it may be, having a small ditch in the middle of 20 foot broad, and as much or more in depth. If the moat be full of water, it must be 20 fathome broad, and from 4 to 5 fathome deep, and divided by a dam of earth of 30 foot thick. The town wall must be high enough, because the depth of the drie ditch which giveth height to the wall, is here filled with water.

M. S. *The breadth of the ditch.*

M. N. *The depth.*

The covert way must be from 3 to 4 fathome broad, having a parapet of 10 or 12 foot high, the moytie of it being sunk into the plain.

L. M. *The breadth of the covert way.*

K. L. *The height of the parapet of the counterscarp.*

The parapets must be of earth, or of unburnt brick, except the outward row, which must be of burnt brick, to resist the injurie of weather.

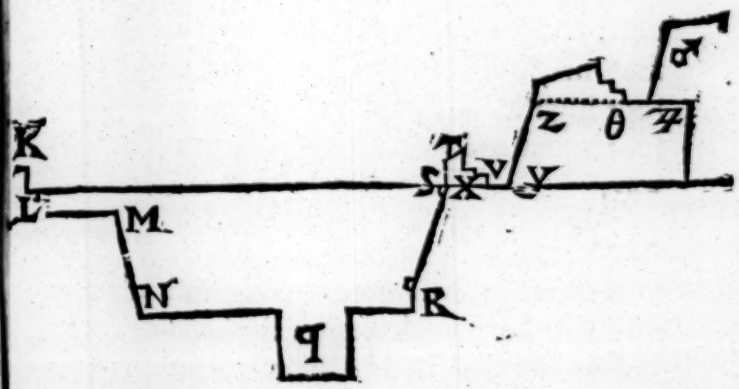
If the curtains be long, there must be a cavallero set on every point; but if they be short there will need but one, which shall be on the middle of them. They must be so high as they may command all the works, and the hillocks without, if there be any, and if it may be. They are commonly raised 10 foot above the rampart. Their length

is

is taken from the number and qualitie of the Artillerie which you would plant thereon ; and their breadth dependeth on the length and reversing of the pieces of Artillerie and of a parapet of three fathomes and a half thick.

The height of the cavallero upon the rampart.

The pieces of ordinance nearer to the center of the fort muſt command thoſe which are farther off ; raiſing the one above the other from 8 to 10 foot.



That all the walls of the Bullworks and curtains turn their Front from the oppoſite places which command them, leading them bias-wiſe, that ſo the batterie be not raiſed perpendicularly upon it, and that the bullet may glance by means of the bias and ſloap, and that they be not commanded nor ſeen from farre off.

The market place of the citie (or ſuch places where the grand watches are kept) muſt be covered in the middle, to ſhelter the battaillons from the rain, and there muſt be pent-houſes along the ſtreets, which lead to the rampart, to the ſame end.

The

The ſtreets ought to be 6 fathom broad at the leaſt, that ſo the waggons and Artillerie may paſſe the freelier.

The ſtairs to paſſe to the covert way of the counterſcarp, muſt be juſt in the middle of the curtain, between the two flanks of the Bull works.

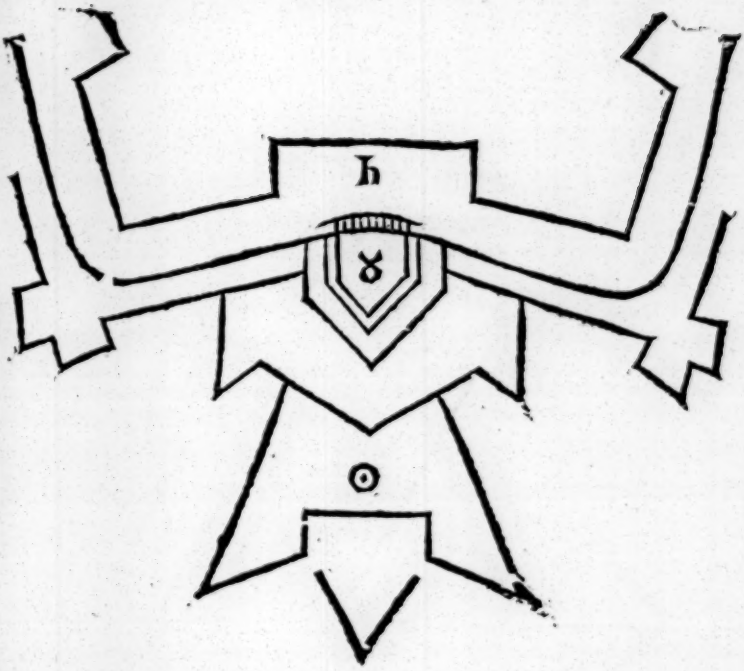
h *Stairs of the counterſcarp.*

There muſt be half moons made on the fore part of the curtains, right over againſt the angles flanking on the counterſcarps; having their face defended by Bullworks open behinde, that ſo they may be defended by the curtain, being 12 foot high from the plain; having a ditch of 25 foot broad and 15 foot deep, beneath its covert way.

8 *A half moon.*

Before the half moons you muſt advance te nailles or hornworks, and at the head of them hal Bullworks, and before them redouts, caſting the earth on that ſide towards the citie, which will ſerve for a parapet. Theſe works muſt be 10 foot deep and 15 foot broad, and muſt be defended from the citie and from the counterſcarp.

o *Trenches, half bullworks or counterpoints.*



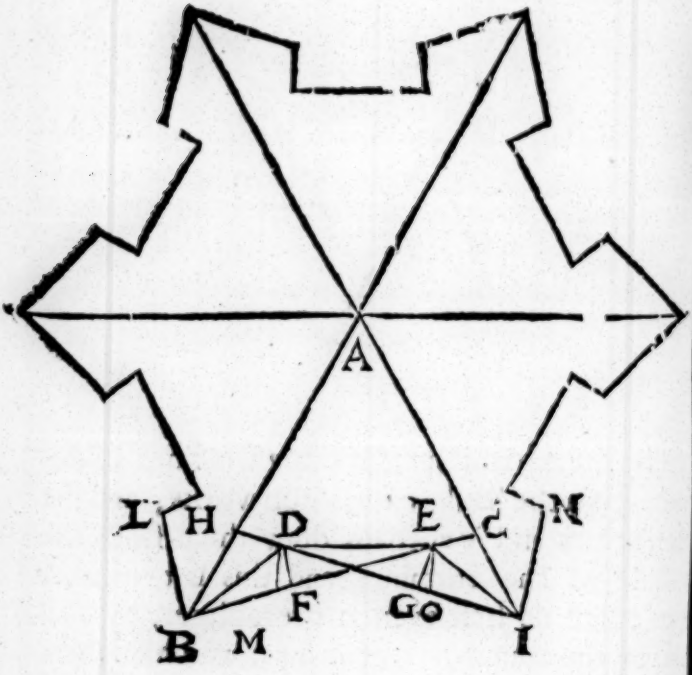
The French and Spaniſh draw the lines of defence from the flanks of the Bullworks; and the Hollanders and Venetians draw them from the middle of the curtain; and this laſt manner ſeemeth to be beſt, even in great places, by reaſon of the abundance of firings, which ought to be preferred before the form of flanked angles.

The inconvenience of ſuch places as overtop or command you, may be remedied, either by caſting them down, ſheltring your ſelf from them, or poſſeſſing and fortifying them by a hornwork or tenaile, or by two half Bullworks, or by one Bullwork and two half ones, thereafter as they be in greatneſſe: at leaſt you muſt be ſheltred from them by good and ſtrong traverſes.

Theſe

These that follow are foure severall wayes of for-
tifying, according to the French, Spanish, Low-
countrey, and Italian fashions.

The manner of fortifying places according to the French.



A B. C. *and* A. I. H. *Are each of them* 2 *ha*
right angles, that so you may have L. B. F. *an*
G. I N. *right.*

B. D. *and* I. E. *divide the half-right angles, int*
two equall parts.

D.

D. F. *is perpendicular upon* B. C.

E. G. *is perpendicular upon* I. H.

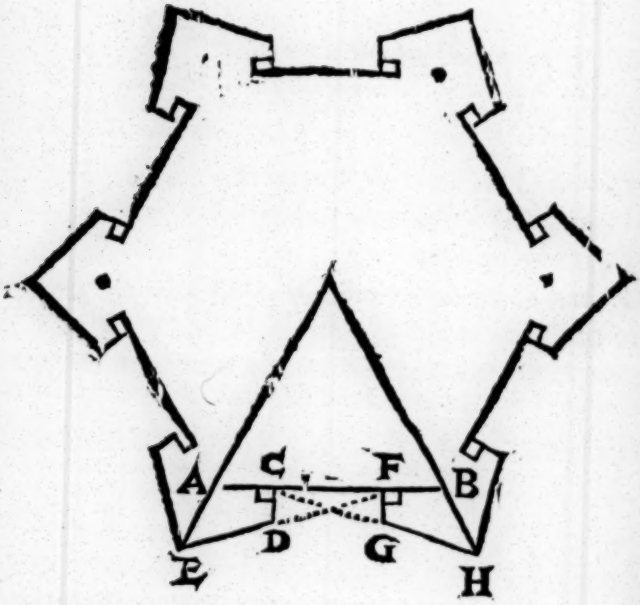
In the figures which have leſſe then nine ſides: but in thoſe figures which have above eight, they are perpendicular upon D. E. *As* M. D. *and* O. E.

B. F. *and* G. I. *are the faces of the Bullworks.*
D. F. *and* G. E. *are the flanks.*
D. E. *is the curtain.*
B. E. *and* I. D. *are the lines of defence, from* 100 *to* 120 *fathome long.*

The

The Spaniſh fortifications.

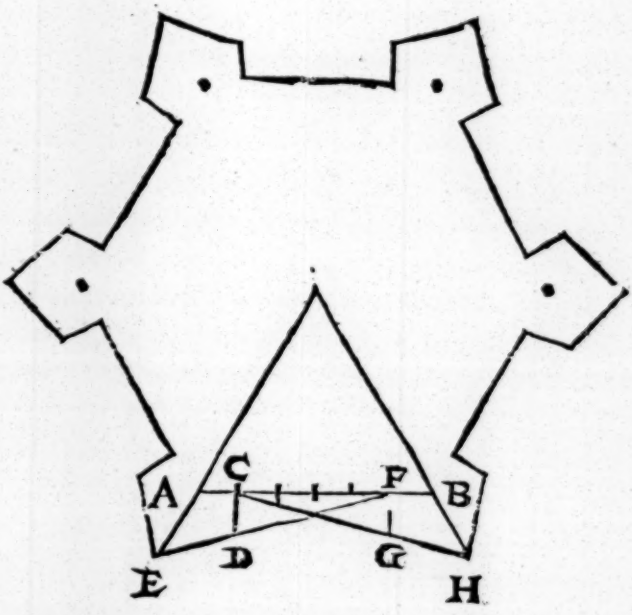
When the Bullworks are made with eares or orillons.



A. B. *Muſt be divided into* 8 *equall parts.*
A. C. *and* B. F. *have each of them two.*
C. D. *and* F. G. *have each of them one.*
E. F. *and* H. C. *muſt be from* 850 *to* 900 *fo*
long.

The Spaniſh fortification.

When the Bullworks are made without orillons.



A. B. *is divided into 6 equall parts.*
A. C. *and* B. F. *have each of them one.*
C. D. *and* F. G. *have alſo each one.*
E. F. *and* H. C. *muſt be from* 850 to 900 *foot long.*

Low-Countrey fortification.

In this table you may finde the quantitie of the angles flanking and flanked, in this manner.

The angles of the figures.	The moitie of angles flanking.		Angles flanked or Bullworks.	
A	C		E	
4	75	0	60	0
5	70	30	69	0
6	67	30	75	0
7	65	21	79	17
8	63	45	82	30
9	62	30	85	0
10	61	30	87	0
11	60	41	88	38
12	60	0	90	0
13	59	25	91	25
14	58	5[illegible]	92	9
15	58	30	93	0
16	58	7	93	45
17	57	47	94	25
18	57	5[illegible]	95	0
19	57	14	95	32
20	57	[illegible]	96	[illegible]
B	D		F	

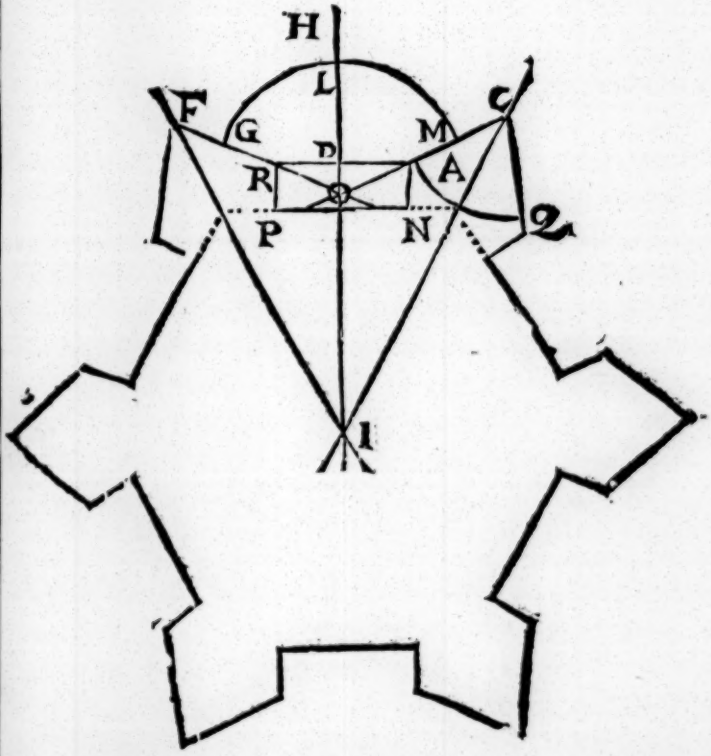
The best approved Authours (for Low-countrey fortification) as Samuel Marolois, Freitag, and others, dissent much from this table.

To finde them in a figure of 6 angles look in the columne A. B. *the number of the angles 6. and just over against it in the columne* C D. *you shall finde for the moytie of its angle flanking 67 degrees, 30 min. And in the columne* E. F. *you shall finde for the angle flanked 75 deg. 0 min.*

To

To designe a fortification of 6 Bullworks, draw the line H. I. *set the compasses in* O. *and make the semi-circle* G. L. M. *then mark* L. G. *and* L. M. *each of them of 67 degrees 30 min. then draw the streight lines* O. G. *and* O. M. *you shall have the angle flanking* G. O. M. *of 135. deg.*

After that, make the streight line R. A. *which cuts with right angles the line* H. I. *(it matters not whether it be near or farther off from* O.*) divide it into 5 equall parts, and give foure to each of the lines* R. F. *and* A. C. *which will make the faces of the Bullworks. Then divide one face into 5 equall parts, and give two to each of the flanks* A. N. *and* R. P. *which must be perpendicular upon the line* R: A. *then draw the line* P. N. *which will make the curtain.*



Place the compaſſes on the point C. *make the ſemi-circle* A. Q. *of* 75 *deg.* (*as is marked in the table*) *then draw the line* C. Q. *and you ſhall have the angle of the Bullwork* A. C. Q. *which being divided into* 2 *equall parts, by the right line* C. I. *will make in* I. *the center of the place.*

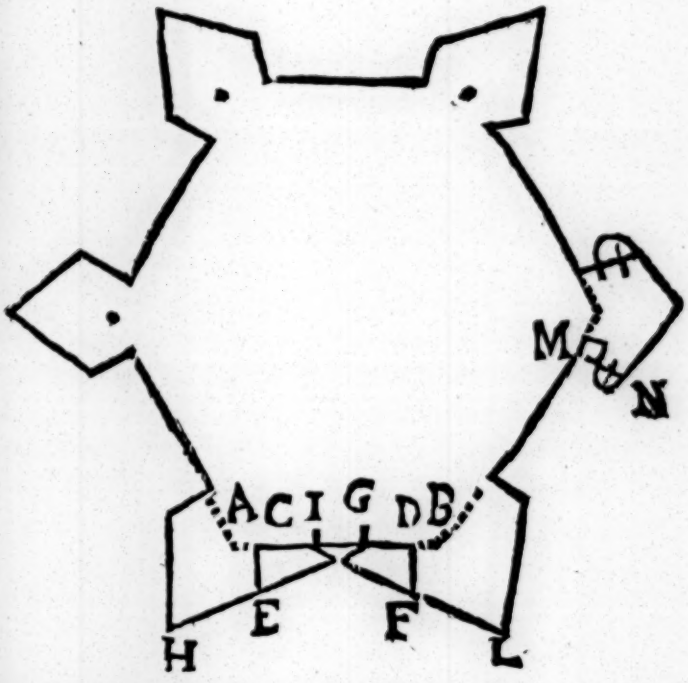
It is a generall rule, that the faces of the Bullworks are the foure fift parts of the curtains, and the flanks the two fift parts of the faces of the Bullwork.

The faces of the Bullworks, in great figures, muſt have 400 *foot; in mean figures* 350, *and in ſmall ones* 300. *You may forbear the precedent table, obſerving* (*for a generall rule*) *to give to the angle flanked three fift parts of the angle of circumference of the figure which you intend to fortifie.*

The

The Venetian fortification.

The distance of the one Center of a Bullwork to the other A. B. *is never longer then* 200 *Venetian paces, of* 5 *foot a pace: nor shorter then* 150, *that so the line of defence be neither too short nor too long.*



A. B. *must be divided into 6 equall parts.*
A. C. *is the sixth part of* A. B.
C. E. *is equall to* A. C.
I. G. *is drawn from the third part of the curtain, in the figures of lesse then* 8 *sides: and from the middle of them in the figures of more then* 7.
M. N. *divideth it self into* 3 *equall parts, two for the shoulder, and one for the casemat.*

Of the defence of fortreſſes.

Chap. V.

THe defence of fortreſſes dependeth on the good order which the Governour obſerveth as well within as without the place, be it for matters politick or militarie.

The politick order within the place containeth all things belonging to a civill life, as livelyhood conſervation, and juſtice, both towards the townsmen and ſouldiers: alwayes having an eye to their manners, life and condition, being aſſured of their fidelitie (but principally of the ſouldiers) before they be brought into the place. And being there to have ſubtile and ſecret ſpies among them, who muſt obſerve how they live, what practiſes they have, whether they be diſcontented at the Governour, and what they ſay in publick and in private: finally to have an eye to all their actions.

Touching his care without, he muſt take notice of ſuch as enter, which are either countreymen, who (under pretext either of bringing ſomething to ſell, or of coming to buy) are let into the towne: or elſe merchants, who by occaſion of commerce do come in and go out at their pleaſure. Of theſe there muſt be regard had whether they deal with perſons ſuſpected, or that themſelves be ſuch, or whether they come from ſome ſuſpected place; and not to ſuffer any to enter, but perſons of good aſſurance, and well known.

The militarie care hath reſpect either to the gates or the walls. Of the gates, either at the opening or ſhutting of them.

Con-

Concerning the opening of them, he muſt (before the ſetting of them open) ſend out an officer with ſome ſouldiers, to diſcover whether there be any ambuſhes in the ſuburbs, churches, fields, decayed buildings, hollow wayes, valleys, ditches, incloſed gardens or woods: and at the ſhutting of them, the Sergeant Major muſt be there aſſiſting as often as may be, and to ſearch and feel the locks with his own hands.

Touching the walls, he ought to have regard whether they be low, ill flanked, decayed, the moat drie; and to uſe the remedies; as alſo to the places where the water entreth, or iſſueth out.

The gates and walls muſt be ſecured with good corps-du-guards, and ſentinells near each other. He muſt never ſlight the danger, but muſt alwayes ſuſpect and fear ſurpriſes and treaſons, being vigilant and active: often viſiting his guards, and coming upon them at unawares: that ſo they may fear aſmuch to be ſurpriſed by the Governour as by the enemie; which courſe will hold them to their duties.

Of the taking of fortreſſes by petard or any other ſurpriſe, or by treacherie.

Chap. VI.

THey which have an enterpriſe upon any place, will ſurpriſe it either by petard, or by ſcalado, or by ſome other defect which is in the gates or walls, or elſe by intelligence and treacherie.

If you would ſurpriſe it by petard, you muſt firſt well know the gates, rails, barres, palliſadoes, draw bridges, bridges, pitfalls, portcullices, and grates: and the places of the flanks, whether they be on the ſides, above, or before; whether the ditch be drie or filled with water; whether it be broad or deep; whether there be loop holes over the gate, corps-du-guards, and in what place; whether the entrance into the gate be right on or winding; and in all theſe things you muſt obſerve how many paces there may be of length, breadth, height, and diſtance between piece and piece, as near as may be.

The place being diſcovered, you muſt make uſe of ſtratagems to cloak your intentions, and to divert your enemy to ſome other place.

When there be any ſuburbs, decayed houſes or any woods near the place which you intend to ſurpriſe, you may make uſe of them to facilitate your approaches, and to lay your ambuſhes, alſo the eaſier to diſcover what is done about the gates of the town, ſo to lay hold on the occaſion at the inſtant when you ſee it fair for you; and to receive advertiſements by thoſe perſons which you ſhall have ſent to diſcover the place.

Being

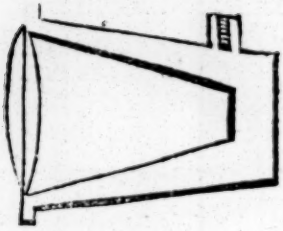
Being thus near, you may to good purpoſe releeve thoſe which give the firſt onſet, and diſpatch the readier; yet you muſt not approach ſo near, as that you be under command of their canon, for fear (if you be put to the retreat) you be had by the breech.

The time well taken doth much facilitate enterpriſes, which is uſually a little before day, by reaſon that the ſentinels (being weatie and faint) do ſleep, and darkneſſe favoureth the approaches, and ſerves for cover of thoſe which put the plot in practice, prepare the engines, and plant the petards, and thence gives terrour to the aſſailed.

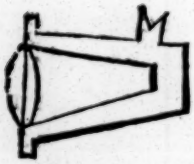
The petards muſt be made of fine or red copper, with a tenth part of braſſe. That for the bridge muſt be 11 inches long, and at the breech 7 inches and a half about, and 5 inches wide within. The metall at the breech muſt be one inch and one fourth part thick, and a half inch thick at the neck, without reckoning the muzzel ring. The mouth muſt be 10 inches wide, and it muſt have three handles, and a pipe over the touchhole joyning to the breech. It muſt weigh from 60 to 70 pound of metall.

That for gates with overthwart barres, muſt be 9 inches long, five twelve parts of an inch thick at the neck, and one inch at the breech. The mouth 7 inches wide, 6 on the outſide of the breech, and 4 within. It muſt weigh near upon 40 pound.

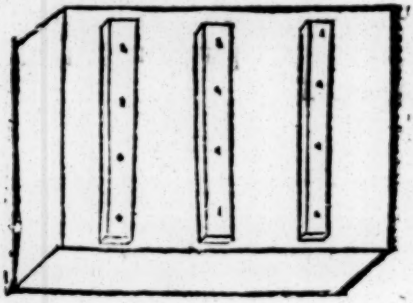
That



That for gates with plain bolts, or for palliſadoes, muſt be 7 inches long, one third part of an inch thick at the neck, and three fourth parts of an inch at the breech, the mouth 4 inches wide, 3 inches and a half at the outſide of the breech, and 2 within. It muſt weigh near upon 15 pound.



Between the petard and the bridge, there muſt be a madrier or wooden planchier placed, 1 foot and a half broad, 2 foot long, and 3 inches thick. If the wood be not very ſtrong, it muſt be ſtrengthened with plates of iron, being ſet on athwart on the outſide of the planchier, and lengthwiſe on the other ſide.



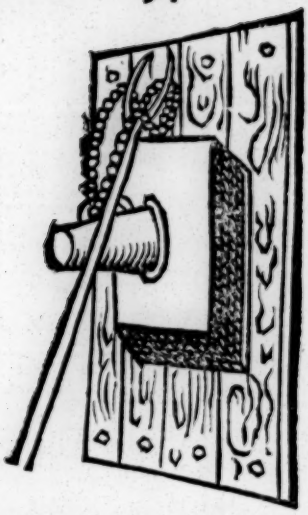
The

The charge of the petard for the bridge is from 5 to 6 pound of powder; of thoſe for ſtrong gates from 3 to 4 pound. And for palliſadoes from one pound and a half to two pound. They muſt be charged with the fineſt powder that can be had, beating it hard into the petard (but not ſo that you bruiſe the grain) which muſt be ſtopped with a wooden trencher or plug of an inch thick, very juſtly fitted, and ſome molten wax to be powred on it to cloſe the rifts, and to keep the water from getting in, if perchance it ſhould fall into the water. The petard muſt not be charged up to the mouth, but there muſt be 3 fingers breadth left, which room muſt be filled up with towe or ſuch like, which muſt be preſſed down very hard, and then there muſt be a linnen cloth to cover the mouth of the petard, cloſe bound with a cord about the neck, to keep it in. Over the touchhole there muſt be applied a ſtopple of cork, and over it a plaiſter of wax or pitch, for fear of water.

Before the petard be hung on, you muſt have a priming iron to ſtirre the priming powder, which muſt be of a ſlow mixture (that ſo the petardier may have leiſure to retire, before the reverſe of the petard ſurpriſe him) and it muſt be fit to reſiſt water. It is compounded thus; take 3 parts of fine powder, 6 of ſulphur, and 9 of ſaltpeter, pound each of them apart very ſmall, then mix them together in a diſh with a ſtick; then poure oyle of peter into it by little and little (that ſo it may not become as a paſte) and let it drie throughly in the ſhadow, then lade your pipe with it.

The eaſieſt way to hang the petard at the barres or gates is by a fork, as this figure ſheweth.

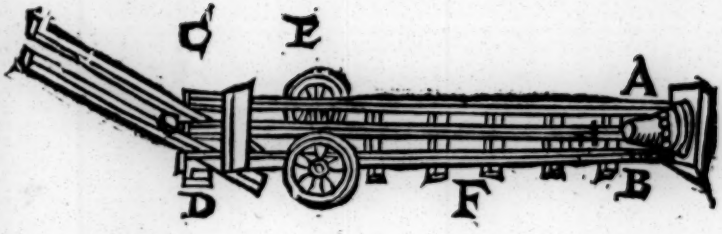
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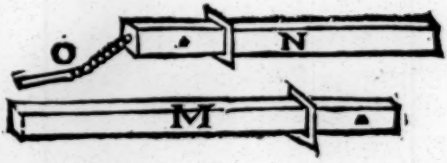


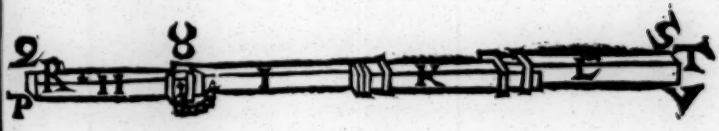
But the petard for the bridge muſt be applied by a carriage, made as followeth.

It muſt have a counterpoiſe at the taile mounted on 2 *wheels of three foot and a half high, and two inches and a half thick, mounted on a ſquare iron axletree, one inch and a half thick. The point of the carriage* A. B. *muſt be broad enough to contain the petard, namely one foot*; C. D. 3 *foot*, A. E. 20 *foot*, E. C. 6 *foot. The carriage is compoſed of* 3 *long planks* C. A. G. H. D. B. *each of which are made of* 4 *pieces, bound about with rings of iron, as is ſhewed in* H. I. K. L. *and are to be taken aſunder, to make them portable, as is ſeen in* M. N. *And are then faſtned together with the pin* O *as is ſhewed by* 8. *Theſe* 3 *planks are faſtned together by barres* 2 *inches broad, and* 1 *inch thick, one foot diſtant from each other, as in* F. *The breadth of the planks is* P. Q. 5 *inches*. Q. R. 2 *inches*, T. V. 8 *inches*, T S. 3 *inches. Along the plank of the middle of the carriage* G. H *there muſt be a range made to lay a train to give fire to the petard.*

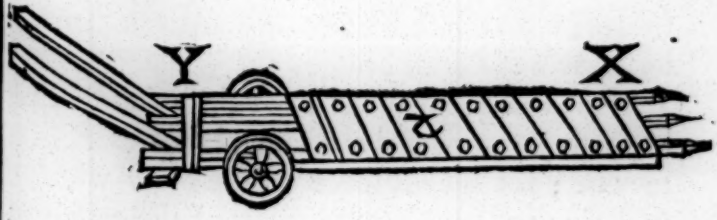
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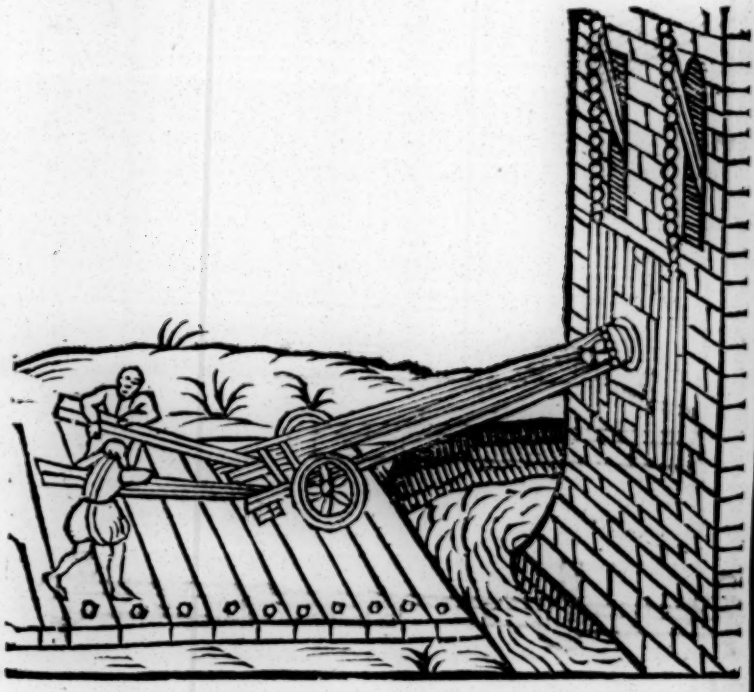




The rowling bridge muſt be made even as the carriage, ſaving that it is as broad at the end X *as at the other* Y. *and is covered with planks, as is ſhewed in* Z.



Two men may easily thrust forward the carriage, and apply the petard to the bridge.



When there is a gate between the bridge and the draw bridge, the petard must be hung just at the middle of the bridge; but when there is no gate, the petard must be placed just against the drawbridge, that so meeting with the violence thereof, it may raise it on high, and by that means beat down the drawbridge.

If the bridge joyn not close aloft (as often it hapneth) the petard must be placed as high as may be; for the violence of the blow which it will give against the stone-work of the gate, will fell it down.

To fell down a drawbridge which joyneth not well to the wall, it may be done without petard, by

by a tortois of braſſe placed between the wall and the bridge, which will fell it down with the crack of it.

This tortois is made thus; Take 2 diſhes of braſſe which are made hollow 5 inches, 1 foot broad, and 2 inches thick; joyn them one againſt the other, and fill them with powder.

Ordinarily the good order, and good proviſion of all things neceſſarie, cauſeth the execution to ſucceed well: ſo the leaſt diſorder hindreth it. Therefore every thing muſt be commodiouſly ordered, diſtributing to ſeverall commanders the diverſitie of things which muſt be executed; as to arrive at the place 2 houres before day, to ſend out to diſcover, to know whether the enemie be not advertiſed, and whether he keeps himſelf on his guards (which would give you cauſe of changing your purpoſe) to cauſe your carriages and rowling bridges to be joyned together farre enough from the gate, that ſo they of the town may not hear the mule go which carrieth them, and the noiſe of them which are to unloade them: to cauſe the petardiers to advance, each of them carrying his fork and planchier, and on his ſide a man carrying his petard, which ſhall make overture of the barres, palliſadoes, and gates, ſo that the carriage of the petard for the bridge may paſſe, that ſo they may fell down the bridge. If the bridge be in ſeverall pieces, they muſt be drawn together with hooks. If one ſhaft keep up aloft, a petard muſt be applied to it. If the bridge fall into the moat, you muſt make uſe of a rowling-bridge. After that, there muſt be 2 crutches, ſhoars, or treſſels ſet under the porteullice to hinder it from being let down: but if it be let down before,

down before, it must be overthrown by the violence of petards with great planchiers (if it be of wood) but if it be of iron, you must have a petard with strong handles, to fasten one or more bowts of iron chains about them, having hooks at each end to grasp good store of barres.

The gate being opened, you must readily succour the first which seized on it, charging furiously upon those which shall oppose and make head against you, casting granadoes and fire-pots amongst them to disorder them, attempting to gain their barricadoes by musketiers and pikes, making all possible speed (for in this businesse diligence doeth all) hindring the assailed from gaining time to joyn or rally themselves together, and to form a body to drive you out. You must place sure guards at the gate, and seize upon the corps-du-guard (which is upon the walls and ramparts) also on the market-place, the churches, the town-house, and all places where the inhabitants might assemble, fortifie, and render combat. You must also succour those of your men which shall meet with resistance, keeping them from pillaging, commanding every man to stand firm in his appointed place; untill the guards be placed, all the streets and parts of the town be secured, and the quarters and lodgings for every one be laid out. But if you would surprise a gate of a town without petard, you must by discoverie or intelligence know whether it be ill guarded, whether there be few souldiers, whether they wander farre from their armes, whether the corps-du-guard be placed in a fit place to be surprised, whether the souldiers keep within it or about it, whether they leave the gate at any certain houre,

(as

(as for their meals, their devotions, their ſports, or gathering of corn or grapes.) To know whether their commanders know their ſeverall charges, or whether they be negligent or ill obeyed, and that therefore the guards be diſordered, whether there be any place near, fit to favour your embuſcadoes (as ditches, garden walls, hemp, corn, hollow wayes) to give on upon the gate at the opening of it, amongſt the throng of thoſe that iſſue out, or a little after; for the guards (having quitted their armes, and put out their matches) may be ſurpriſed, before they can have means to recover themſelves.

You may cauſe the gates to be ſurpriſed by ſouldiers diſguiſed, in the habit of countrey fellows, women, or merchants, bringing or conducting of wares, wood, or hay, on their backs, by cart, waggon, or boat, (if there be a river, lake, or ſea) which may ſeize upon the gate, and hold it ſo long till they which are in ambuſh come to releeve them.

If you would ſurpriſe a place by ſcalado, you muſt firſt (by diſcoverie) know the advenues, the counterſcarp, and the moat; to know whether you may come at it undiſcovered, go in and out without difficultie, and that over againſt the place where you mean to give the ſcalado, without being compelled to take any great compaſſe about the ſame, otherwiſe you are in danger to be knockt, and taken in a trap. You muſt know whether the moat be drie or frozen, or the water ſhallow, without mud, and eaſie to wade through; whether the wall be low, ſo that it may be ſcaled, whether the place (where you mean to give on) be farre off from the corps-du-guard or ſentinell,

that you may not be discovered, whether the place be large enough to raise good store of ladders, and consequently for many men to enter at once; or strait, where you must enter one by one; and to see, whether (after some of the first be entred) you could make a greater overture on the place, or at least to have time to be all entred before day, or being discovered, to discover the place of the corps-du-guards, the neareſt place to be ranged in battalia, the market-places and churches, and to cause them to be seized upon by bataillons, sending them at one and the same time towards the right and left hand, and right forward, the grosse remaining firm in battalia to send succours where need shall require, keeping neare some gate to gaine and open it, to let in the Cavallrie.

A place may be surprised (at the walls) without scalado, by some defect in them; as when they are old, decayed, weak, of little thicknesse, of brick, stone, and clay, and without rampart, for they may easily be pierced by some engine or instrument: or if there be any lowe windows along the curtain, or any sallie-ports, or any sink-holes or drains for filth, or places for water to passe in and out, being ill guarded and weak.

Intelligences and treacheries may take effect, when some occasion shall give you means to corrupt the fidelitie of those of the place, which are able to give you entrance and deliver you the same. These occasions will be when you shall discover a possibilitie to convey some desire of change into their mindes, which often happeth amongst high-minded souldiers which desire

deſire to make a fortune; or amongſt thoſe which are revengefull, when they be diſcontented at the Governour or ſome other officer. Beſides, moſt of them think themſelves ill dealt with, when they be not advanced to offices, having a higher eſtimation of themſelves then they deſerve; and others be ſo covetous, as there is nothing which they will not undertake for money. Theſe and the like things may accompanie intelligences and treacheries.

How to beſiege and expugne cities.

Chap. VII.

A Citie is ſaid to be taken by force, when it is carried with an Armie by batterie; whereunto there belong three conſiderations: The firſt before the enterpriſe; The ſecond, during the time of the ſiege; and the third, after the taking of the citie.

Before the enterpriſe, you muſt conſider, whether you ought and whether you be able to do it.

You ought, when by this means you recover your own, weaken your enemie, you ſecure and fortifie your ſelf on that part, you encreaſe your revenue, and you get good ſtore of bootie. But you ought not to do it, if the charges of the ſiege will ſurmount your profit, or that it will be difficult to hold the place after you have gained it. or when it is ſo ſtrong, ſo well provided of all neceſſaries,

or ſo near to places of releef, that there is greater likelihood of dammage, then hope of good ſucceſſe.

You are able, when you have all manner of proviſion neceſſarie for the enterpriſe, and that in ſufficient meaſure. The moſt neceſſarie things are money, ſouldiers, artillerie, munitions for the armes, as powder, bullets, morters, granadoes, muskets, pikes, &c. And for the inſtruments, as ſhovels, pickaxes, hand-barrows, wheel-barrows, ſacks, baskets, &c. And for wood to make platforms for the artillerie, gabions, ſauceidges, blindes, boats, &c. And victuall in abundance. The quantitie of all theſe muſt be meaſured by that which ſhall be requiſite for the ſouldiers, the canon, and the time that the ſiege may be like to continue, which may be computed by the proportion of your forces compared to thoſe of your enemie; by the qualities of the works of the place, with the number of your munitions and artillerie; by the garriſon, with your number of ſouldiers; by the ſituation of the place, and the releef which might be brought to it, with the means which you ſhall have to ſtop and hinder it, and to facilitate the bringing of victuall into your camp; by the diſtance, with the meanes to lead your armie thither; by the qualitie of the ground, with the conveniences which you have to make your approaches.

And becauſe that oftentimes accidents do befall which were not foreſeen, as by unexpected releef, an inundation or overflowing of waters, a change of weather, a mutinie amongſt your own men, or a contagion.

There muſt be a provident care taken for a retreat,

treat, ſo as (being conſtrained to it) it may be made commodiouſly and eaſily without diſorder, if it may be: for thereon dependeth the honour or diſhonour, the profit or dammage of the aſſailant.

During the ſiege, you muſt obſerve many things with good order, and principally theſe; Firſt, you muſt environ and ſhut up the place, entrenching your ſelf round about, fortifying your ſelf as well againſt thoſe which might come to releeve them, as againſt the ſallies of the town, in ſuch ſort as not any perſon may be able to go in nor out; chooſing a fit place for the Armie to ſet down, to make the field of battaile, to make your quarters and their alarm-places. Taking care that the quarters be ſecured by good retrenchments and forts, well flanked and guarded, within againſt the ſallies, and without againſt ſuch as might come to releeve the place, or diſturb your Armie: that they be commodious to receive and conſerve the munitions for actions and executions. You muſt diſpoſe the approaches, run your trenches, make your way to arrive in ſafetie to the place where you intend to raiſe your batterie, obſerving that it be as ſhort as may be, ſheltered and faithfully guarded by a good number of men, having room enough between piece and piece, and for their reverſe, and that they command the place which you intend to batter; that the trenches be ample, large, deep, not ſtraitned, well flanked and defended by forts more or fewer, according to the ſtrength of the garriſon which is within the place, and to the time in which the releef might arrive.

During the time whileſt you are making the

trenches of approach, you must take away all the high flanks with the canon, then having run your trenches to the counterscarp, you must raise platforms with beds for the Artillerie, near the points of the counterscarp, to take away all the low flanks, by this means to render the passage of the moat secure. And whilest this batterie is a making, you must pierce the counterscarp, and advance your galleries, untill you joyn them to the Bullwork; at the same time beginning the sap and the mine. But if you be put to force it by Artillerie, dispose your batterie so that it may commodiously discover the place which you intend to batter; that there be room and libertie for the pieces, loop-holes, munitions, guards and officers; that it be not exposed to the Artillerie of the enemie, or being so, that it be sheltered by traverses and gabions, making it hollow underneath if you fear mines, and retrenching it round about to meet with the sallies of those of the town; furnishing it with planks and pent-houses against their granadoes and stone-pieces; also not approaching too near, to prevent their fireworks and granadoes. Make your batterie furiously and in good order, battering within a fathome of the foundation of the wall, piercing it in divers places; then batter it acrosse to make the wall to totter. The breach being made, you must cause it to be viewed by men chosen to that purpose, each having a head-piece on his head musket proof and a target with a long rift, and another rift acrosse that. The breach must be accessi-

ble

ble and not too right on, capable of many aſſailants, having all the flanks broken both high and low. The ſouldiers which are to give the aſſault muſt aſcend in good order, aſſail furiouſly, fight obſtinately, and they muſt either be repulſed by thoſe of the garriſon, or remain maſters of the place. If they be repulſed by the ſole valour of the enemie, in this caſe (without delay or ſuffering the enemie to gather breath) you muſt charge them again with freſh men and in greater number, ſo often, untill you enter by force; for fighting onely againſt men, it were a ſhame that a greater number of freſh men ſhould not force them.

If ſome retrenchment and new fortification made by the garriſon hath held the aſſailants from paſſing further; in this caſe, if that fortification be weak, it muſt be forced by the ſap and mine, ſcaling ladders, fireworks and granadoes; but if it be ſtrong, you muſt lodge upon the breach, and preſently again begin the ſap and mine and approach, and draw up ſome piece of ordinance on the breach.

Whileſt theſe things above ſaid be in the executing you muſt moleſt the beſieged by all poſſible means you can, as by attempting them by treacherie, making them conſume their munitions in ſhort time and unprofitably, breaking the conveyances of their waters, making feigned batteries, confounding their ſignalls by making the like, ſtirring up cauſes of ſuſpicion amongſt themſelves, often making falſe alarmes,

taking heed that you be not affronted by ſpies, cauſing it to be made known that you want nothing to bring the ſiege to an end, galling them with fireworks, granadoes, and artillerie, in their magazines, corps-du-guards, and alarm-places; finally giving no reſt to the aſſailed untill you have either forced them, or be conſtrained to retreat.

If you carrie the town by force, and remain maſter of the place, the bootie is to be given to the ſouldiers (principally to thoſe which made the aſſault) which are the priſoners and ſpoils of the enemie, alwayes having regard to the women and children to deal fairly with them.

If it be commodious and advantageous to the vanquiſher to preſerve the fortreſſe, he muſt repair it preſently, emptying the moat where it was filled up, laying plain the trenches, throwing down the cavalleroes and batteries without, repairing and making up the breaches, returning the waters into their naturall courſe if they were turned out, fortifying the place better then formerly it was, if it may be, providing it of a ſufficient garriſon, of good, valiant, and prudent Governours and Captains, of victuall, armes, manufactures, mechanicall inſtruments, and Apothecaries drugs.

If it be not advantageous to maintain the fortreſſe, he muſt cauſe it to be demantled, and all the fortification of it to be raſed; leaving the houſes entire, provided that afterward they may not again fortifie there, nor endammage him.

The uſuall practices to aſſail fortreſſes.

Firſt you muſt labour to get a map or plat of the fortreſſe, and of the champain round about it,

it, and to be informed of their munitions; to know the bigneſſe and capacitie of the fortreſſe, the amplitude and commoditie of the market-places and ſtreets, the ſituations of the magazines, town-houſe, Governours lodging, the rampart and walls, their height, thickneſſe, matter, and form, the capacitie, height and ſituation of their cavalleroes. What Bullworks there be, and whether they be great or ſmall, ſunk into the moat, or very high mounted, commanded or commanding, blunt or ſharp, having eares (or orillons) and caſemats, or not; full or emptie, of a large gorge, or ſtrait; made of earth, or lined with ſtone or brick; mineable or not.

Whether the caſemats be ſeen from the champain, whether they be high or low, ſingle or double one upon the other, whether you can batter them in a ſtraight line, or glancing, and whether they have ditches before them to receive the ruines of the batterie or not.

The breadth and depth of the moat, whether the bottom be of ſtone or earth; whether it be drie or with water in it, either all or in part; whether there be ſallie-ports, whereabout they be, and from whence they can be diſcovered.

Whether the counterſcarp be of meer earth, or with a wall of drie ſtone, or with lime and ſand.

Whether the covert way of the counterſcarp be broad or narrow, well or ill ſheltred and flanked; whether the parapet be raiſed above the plain, or ſunk low; whether it be of tranſported earth, and mingled with old ruines, or meer earth, and whether it be eaſie or hard to be cut, ſapped, or pierced.

If there be ſuburbs belonging to the place, whether

whether you can become maſter of them at firſt onſet, or whether you muſt be put to batter them with Artillerie.

Whether there be other works on the outſide of the counterſcarp, what they be, and how they be made.

Whether the ground round about the town do command it, or whether it be levell champain; or if it be commanded, whether it be mooriſh or drie, whether it be rockie or ſandie, and whether you muſt approach it by traverſes or trenches, and whether they be eaſie or hard to make; whether thereabout be wood to ſerve you for the making of gabions, ſauceidges, and other things: whether there be convenient place to encamp the Armie ſafe from the Artillerie of the town, or whether you may encamp near the town by reaſon of ſome advantage, or by ſheltring your ſelf with traverſes, or whether you ſhall be conſtrained to keep aloof off: Whether there be a river, and what manner of one; whether you can divert it from them or not; whether you may make benefit of it, or are to fear an inundation by it; whether it be wadeable or navigable, at ſometimes, or at all times.

Whether the ſituation of the place be near or farre off from other places on that ſide, whether it be able to get ſuccours or munitions, whether quickly or late, and whether you can hinder it or not, and how. Knowing all theſe things, you muſt be informed of the munitions of the town, the number of the garriſon, how many horſe, what commanders, what ſouldiers, what number of Artillerie, as well great as ſmall; what powder, and how much, what Enginiers, what makers of fire-

works,

works, and what Canoniers; whether they be at unitie within the town, or whether there be diviſions.

The Generall being well informed of all theſe things, being reſolved to force the place, becauſe he ſhall judge it faiſeable, he muſt ſend his troops of light horſemen to overrun and waſt the countrey round about, and to take priſoners, thereby to be informed more certainly of the eſtate of the place.

He muſt lead his Armie near to the town, that they may ſee it in battalia, cauſing thoſe to be furiouſly charged which ſhall ſallie out of the town to skirmiſh, and by this means he ſhall diſcover the place, the Bullworks, the moat, the counterſcarp, and the other works.

He muſt make his quarters in ſuch place as is moſt ſecured from the canon ſhot of the town, in the beſt aire, where he may beſt have the commoditie of water (and wood if it may be) and the faireſt ſituation to make the alarm-place.

He is to ordain the quarters of his Armie, and ſhall cauſe the line of circumvallation to be well retrenched and guarded, both againſt releefs, and againſt thoſe of the town.

He ought not to have ſo much regard of aſſaulting the town in that part where it is weakeſt, as of the commoditie and ſecuritie of his camp and his quarters: and commonly the approaches are made from thoſe places.

The trenches muſt not begin nearer to the place then harquebus a crock ſhot, or at leaſt musket ſhot, running them ſo that they be not ſeen ſtraight along by thoſe

thoſe of the town ; that they be broad and deep well flanked and furniſhed with forts, coverin thoſe approaches with hurdles, which are ſubje to granadoes and ſtone-pieces.

The place of the Artillerie intended to batte the high flanks and parapets, muſt be raiſed ſ high, that it may command them ; but that whic ſhould make the breach and beat down the walls muſt be ſunk into the counterſcarp, battering th wall between winde and water (if there be any) or at a fathom height above the ſuperficies of th ditch, if it be drie. The firſt is placed when yo begin your trenches of approach, to favour them the other, when you lay your gallerie to pierce th counterſcarp, this batterie makes the breach and beats down the low flanks. Whileſt this ba terie is a making, you are to pierce the counter ſcarp, and to have the boats or the wood for th galleries in readineſſe, to bring them to the face of the Bullwork, and to go to the aſſault ſo ſoon as you have ſhot a breach, or to ſap and mine the face of the Bullwork, and there to lodge in caſe you cannot advance further, and to carrie it by force.

You muſt lodge your musketiers within the trenches, and eſpecially in thoſe which run along by the counterſcarp, that ſo they may beat away all thoſe of the town that might appear, as well on the curtains as caſemats.

You muſt alwayes make the breach on the faces of the Bullworks near their points, unleſſe ſome advantage do incite you to do otherwiſe.

The entrances to the galleries on the moat muſt be as farre diſtant from the flanks as may be, but in ſuch ſort as they be not ſeen but of one flank.

ank. The more galleries there be, the better. auſe your granadoes to play into the middle of e Bullworks ſo continually, that you may hinder e enemie from working there, or there placing eir guard.

If the moat be full of water, you muſt emptie or paſſe over it by floating bridges (which is angerous) or by galleries, which is not ſo hardable.

You may emptie it, when there is near hand me place lower then the ditch, by piercing the unterſcarp, and giving the water a courſe towards the place; or elſe you may make a ditch, d pierce the counterſcarp to cauſe the water to n into it, which is drawn out by pumps. Or ſe you are to make floating bridges of barrels or undles of cork. But if the moat be ſhallow, you ay make galleries with ſauceidges. Theſe ſauceidges are made of faggots of bruſh wood, from 5 to 20 foot long, and one foot thick in diameter (all ſtuffed with rubbiſh to keep them from oating on the water) then upon theſe ſauceidges ou are to lay hurdles or planks.

If the moat be drie and of earth, you muſt make enches: uſually to that which is drie (if a breach e made) you make neither trench nor gallerie, ut you take away all the flanks to paſſe it ſecurey, and you ſhelter your ſelf on the ſides by urdles, bruſh wood, or gabions.

If you force the place by little and little, and hat the ditch be of a rock, you muſt make a traverſe within the ditch with ſauceidges, or with gabions, or with linnen ſacks full of earth.

Having paſſed the moat, you are to give the aſſault (if the breach be ſufficient or ill retrenched)

ed) or elſe you are to lodge at the foot of th Bullwork, and to go to the ſap and mine ; and ac cording to their effect you muſt give the aſſault advance, or lodge.

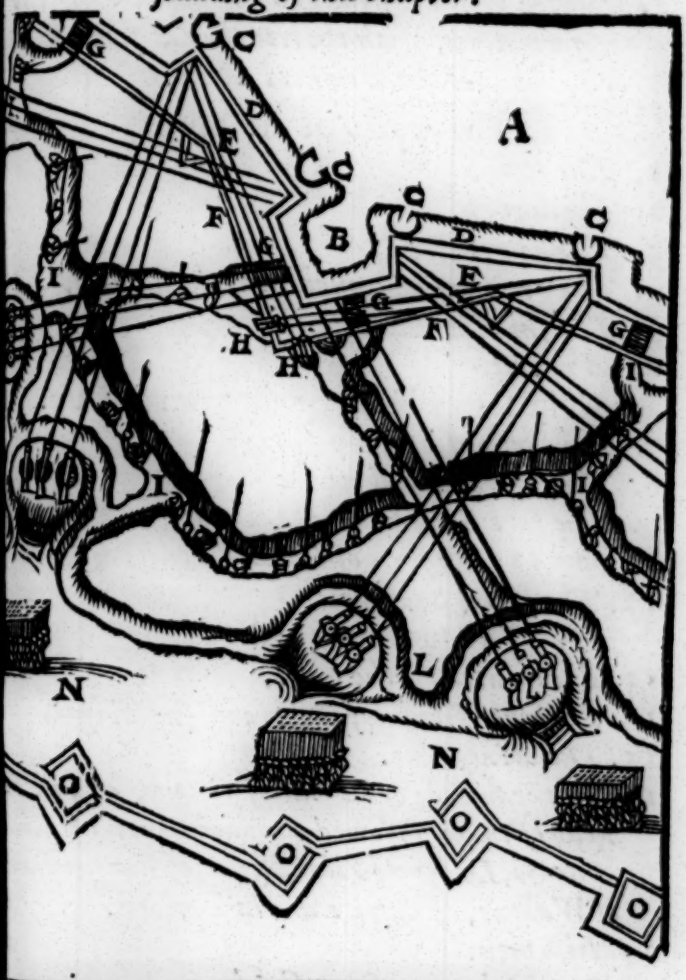
If the retrenchment of the aſſailed be great firm, and ſtrong, having gained the Bullwork, you muſt there draw up and plant your ordnance, and make your batterie the moſt ſpeedy and violen that may be.

Nothing ſo much affrighteth the aſſailed as furious and expedited batterie, for he hath no leiſure to retrench himſelf, and knows not where to range himſelf to be under ſhelter.

That doth much wearie and moleſt the be ſieged, when they are aſſaulted at 3 or 4 ſeveral Bullworks, at 3 or 4 corners of the town ; they are in continuall ſuſpicion, they have their force diſunited, they cannot prevent falſe alarms, their labours are very great, and their guards much more toilſome and inſupportable. Beſides that, every man is diffident of the other guards, breaches, retrenchments, and of their endeavour to make good defence.

It alſo much diſcommodateth the beſiegers, for their forces are diſunited, their quarters are farre from each other, they are in danger to be hard put to it by ſallies or by ſuccours, being ſo ſcattered.

The figures following will facilitate the understanding of this chapter.



A. *The town.*
B. *The Bullworks.*
C. *The cavalleroes.*
D. *The rampart.*
E. *The ditch.*
F. *The counterscarp.*
G. *The Galleries of the ditch.*
H. *The Artillerie sunk lowe to beat down the lowe flank.*
I. *The trenches.*
L. *The cavalleroes.*
N. *The alarm-place.*
O. *The trenches against succours.*

The

The deſcription of the King of Spains Armi encamped before Oſtend, on the quarter of the fort Albert, with the trenches as farre as the Downes. 1601.

The works of the town.

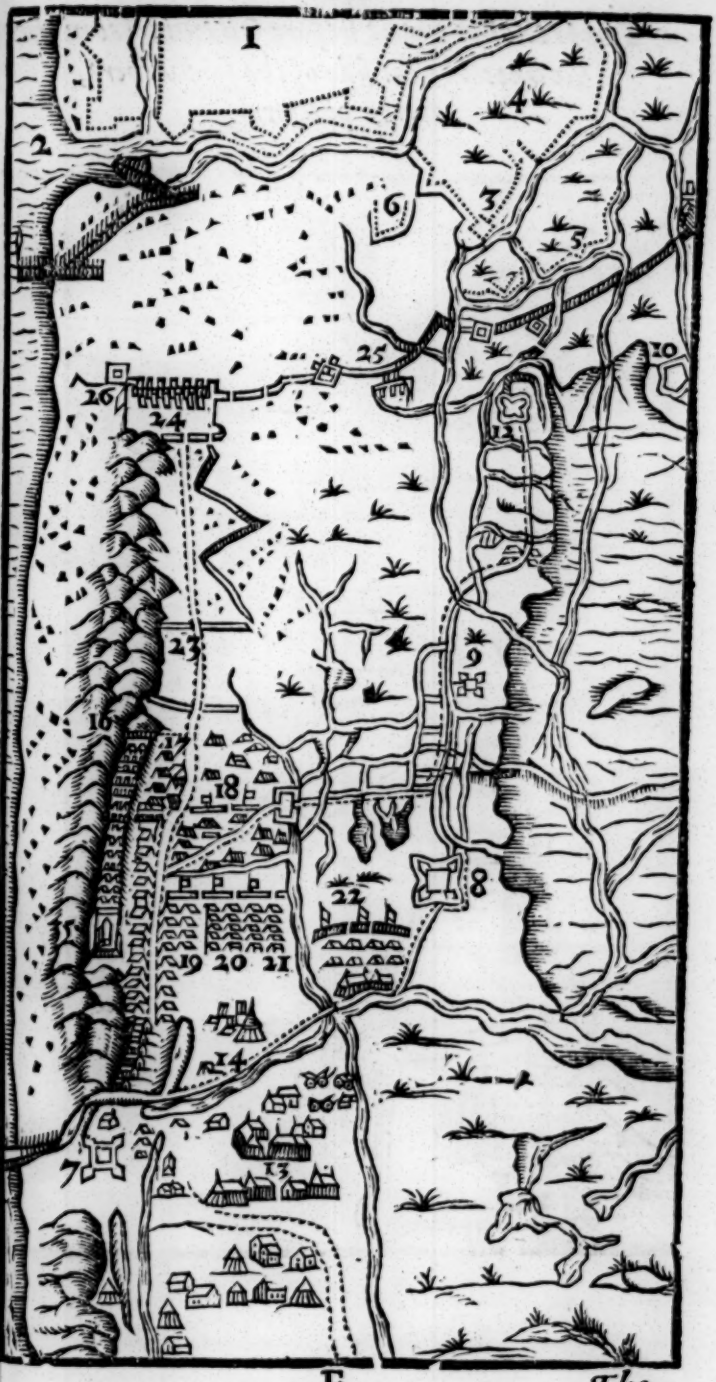
1. *The town.*
2. *The haven.*
3. *The kowes fort.*
4. *The great poulder, guarded by the Engliſh.*
5. *The ſmall poulders.*
6. *A redout.*

The forts which kept the town ſhut up.

7. *The fort Albert.*
8. *The fort S. Elizabeth.*
9. *The fort S. Marie.*
10. *and* 11. *The forts of Count Frederick.*
12. *The fort of S. Anne.*

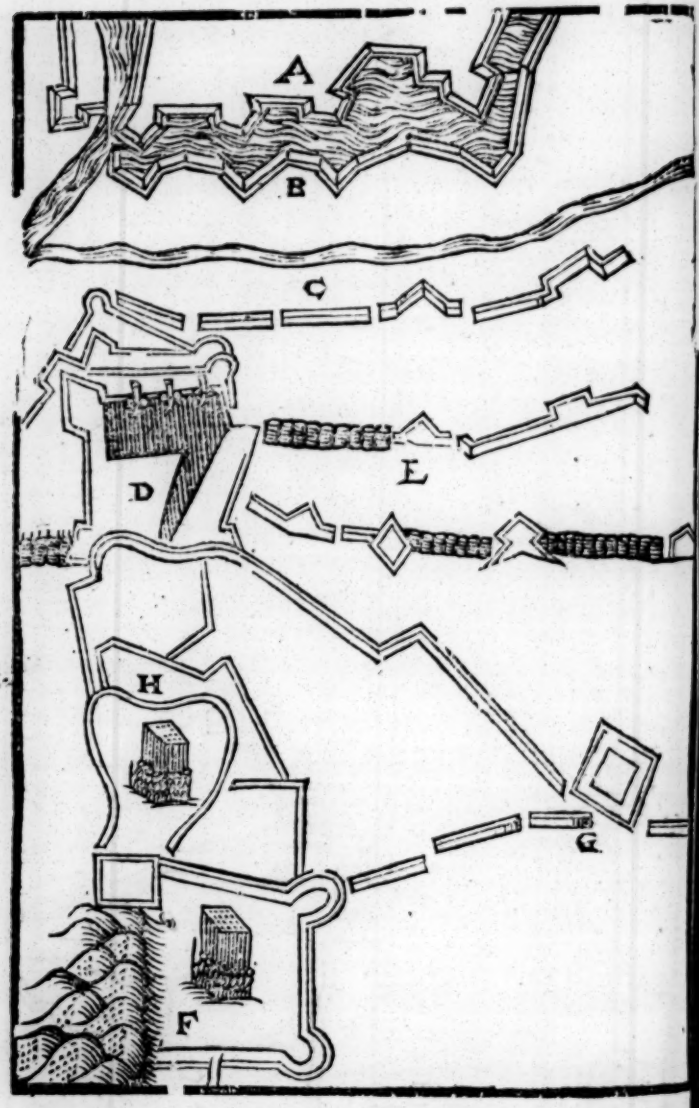
The quartering of the camp.

13. *The quarter of the court.*
14. *The port of bruſh faggots and ſauceidges.*
15. *The Magazine.*
16. *The Spaniards come out of Guant, and in th Rear of them followed the Regiments of Simo Antonio, Lowys de Vilar, Rivas, of Burgundians of Wallons, of Catrice and la Borlotte.*
17. *Iriſh men.*
18. *Spaniards come from Cambray.*
19. *Wallons of Count Freſin.*
20. *The Regiment of the Baron of Achicourt.*
21. *The Regiment of Don Alfonſo d' Alvolas.*
22. *The Regiment of Count Trivulſio.*
23. *The guards of Cavallrie.*
24. *The batterie before the alarm-place.*
25. *The trenches of S Anne.*
26. *The forts of Catrice.*



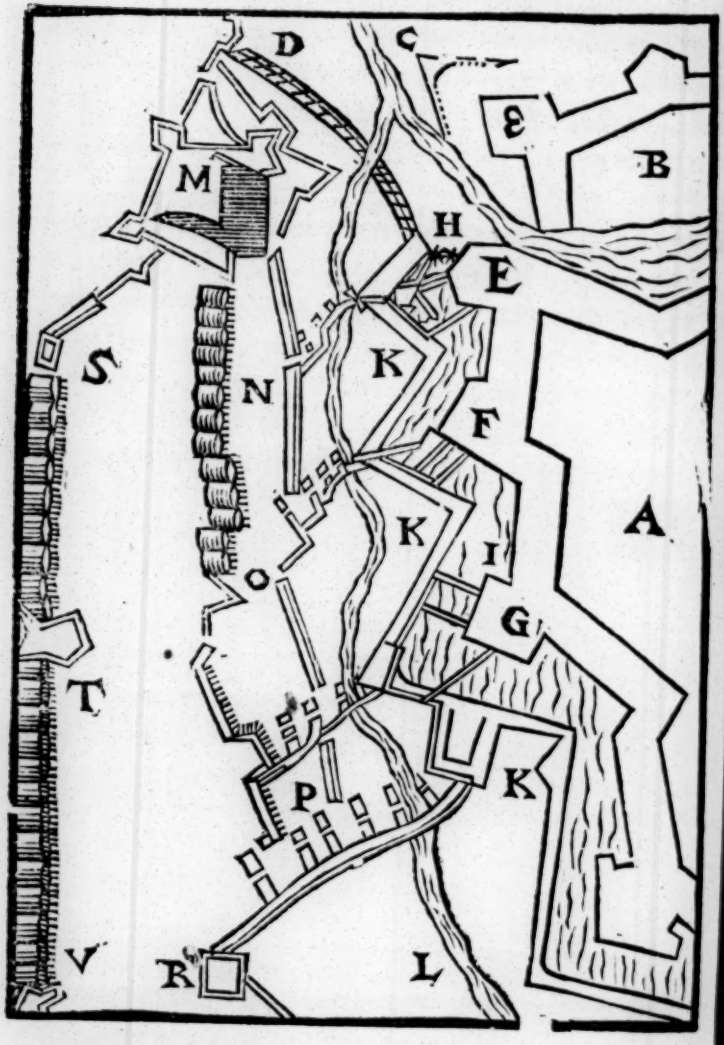
The

The trenches made before Ostend, from the Downes on that side of the fort Albert, to the platform.



A. *The town.*
B. *The counterſcarp.*
C. *The channell before the counterſcarp.*
D. *The platform.*
E. *The trenches leading to the poulders.*
F. *The fort of the alarm-place.*
G. *The great trench which ſheltereth the alarm-place.*
H. *The galleries which were made at the beginning of the ſiege with ſauceidges along the Downes, to ſeize upon them; which were to be put forward by little and little, as farre as the haven.*

The trenches made before Oſtend, from the platform to the town.

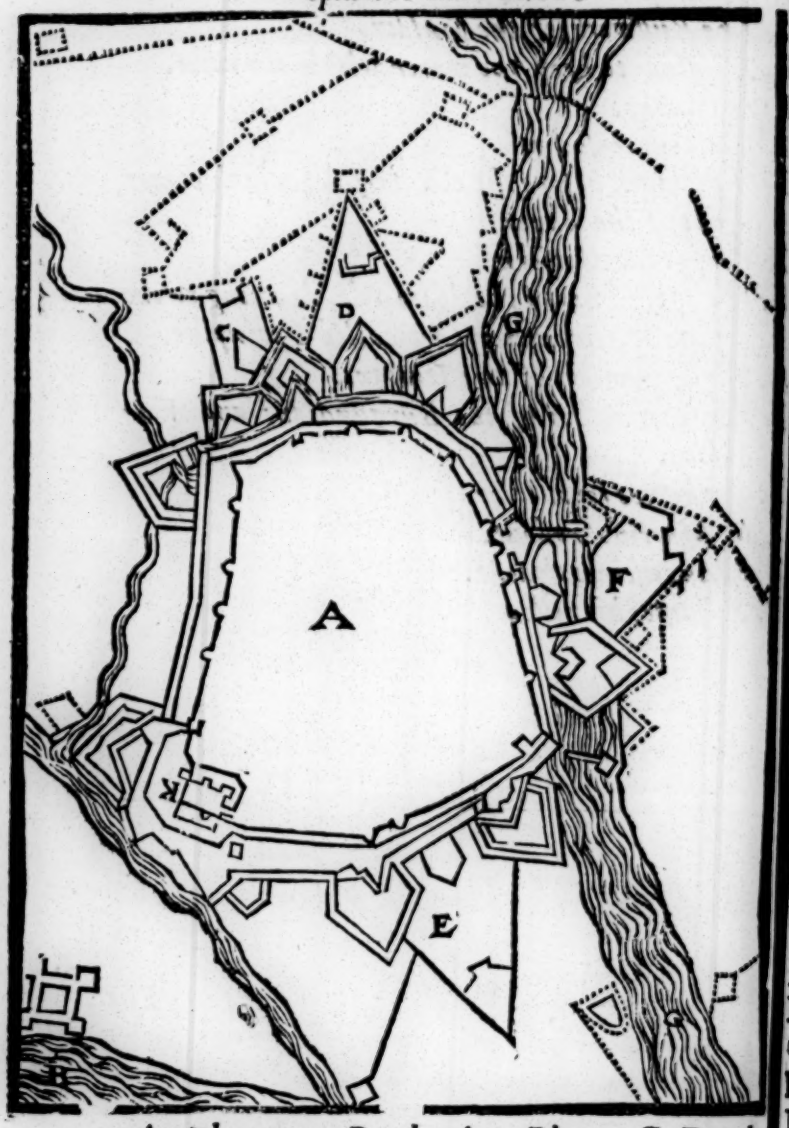


A. *The new town.*
B. *The old town.*
C. *The old haven.*
D. *The dam.*
E. *The Bullwork of Sandhill.*

E. *The*

E. *The Bullwork of Helmont.*
F. *The weſt Bullwork.*
G. *The Bullwork of the poulder.*
H. *The ſluce to keep the water within the moat.*
I. *The moat.*
K. *The counterſcarp.*
L. *The chanell before the counterſcarp, which comes out of the haven.*
M. *The great platform.*
N. *The approaches of the Spaniards, drawing to the point of the counterſcarp called Porcupine.*
O. *The approaches of the Italians.*
P. *The approaches of the Burgundians and Wallons.*
R. *The kowes fort.*
S. *S. Martin's redout.*
T. *S. Auguſtines redout.*
V. *S. James his redout.*

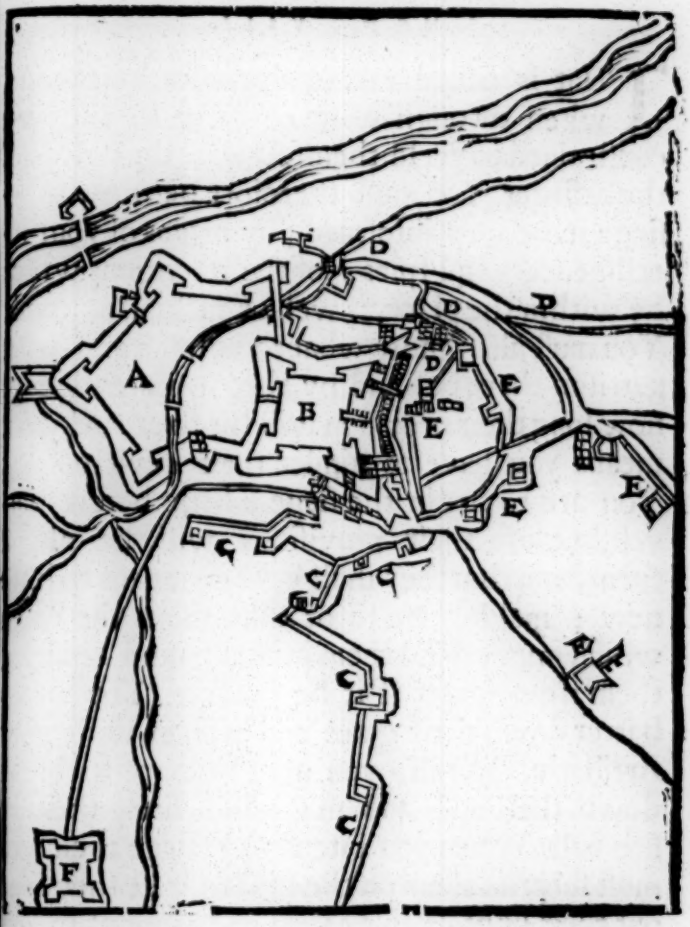
The ſiege of Rhynberg, by Marquis Spinola. anno 1606.



A. *The town.* B. *The river Rhyne.* C. D. *The French quarter.* E. *The Engliſh quarter.* F. *The Friſons quarter.* G. *The quagmire.* K. *The caſtle of the town.*

¶ The lines ſhew the works of the town, and the pricks demonſtrate the approaches of the Spaniards.

The ſiege of Gulick. 1610.



A. *The town.*
B. *The Caſtle.*
C. *The trenches of the Prince of Anhalt.*
D. *The French trenches.*
E. *Prince Maurice his trenches.*

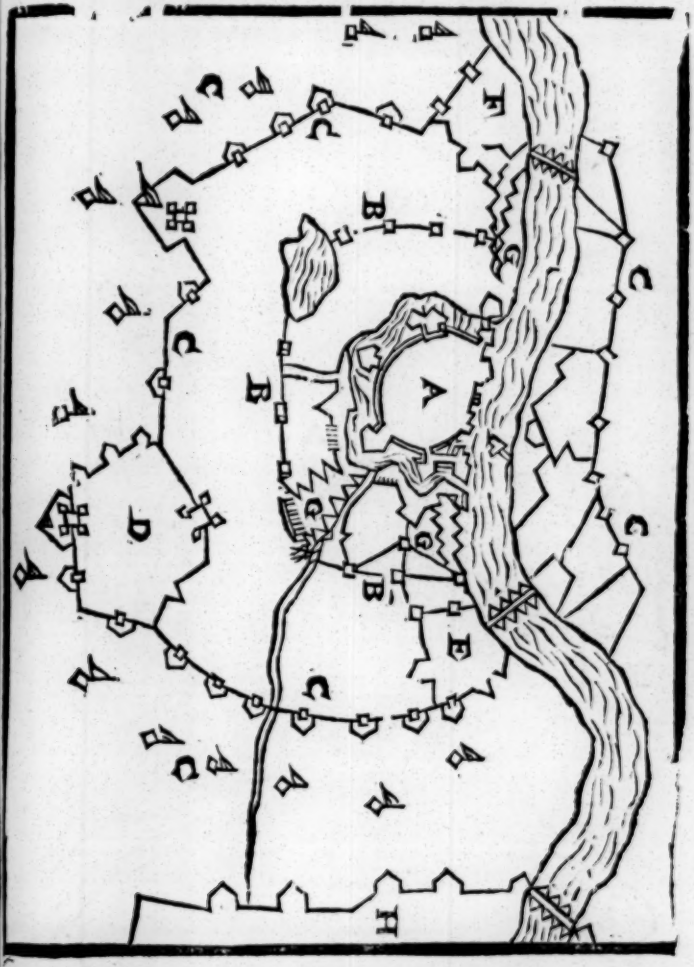
Of taking fortreſſes by famine.

Chap. VIII.

THat is called taking fortreſſes by famine, when through want of victuall, they are conſtrained to yeeld themſelves to the power of the beſieger. You muſt therefore before you beſiege it, be well informed (by means of your intelligencers and ſpies) of the munitions which be within the place, as well of victuall as drink. You muſt alſo know what townſmen and what garriſon there be, and by that you are to judge how long their proviſion will laſt them, and what means you have to hinder their revictualling. You are to begin the ſiege a little before harveſt, becauſe their proviſions will be almoſt ſpent, and that they ſhall have no means to have new; making waſte of that about the town which might ſtand them in ſtead, and hindring them from water if it be poſſible. You are to batter down their gates and bridges with your Artillerie, and alſo you muſt attempt to break down their mills and magazines, firing them by fire-balls. When you intend to beſiege them, you muſt ſurpriſe them on the ſudden, leaſt they ſend out their unprofitable eaters, and attempt to provide themſelves. You muſt have good ſtore of Cavallrie, to be maſter of the field, and alwayes to ſend out upon diſcoverie. The town muſt be ſhut up with trenches round about, fortified with many good forts, that ſo you may hinder their revictualling, and withſtand the force of a releef, if it be to be expected: as the Prince *Maurice* did before Grave, *anno* 1602. and before Sluce *anno* 1604.

Grave

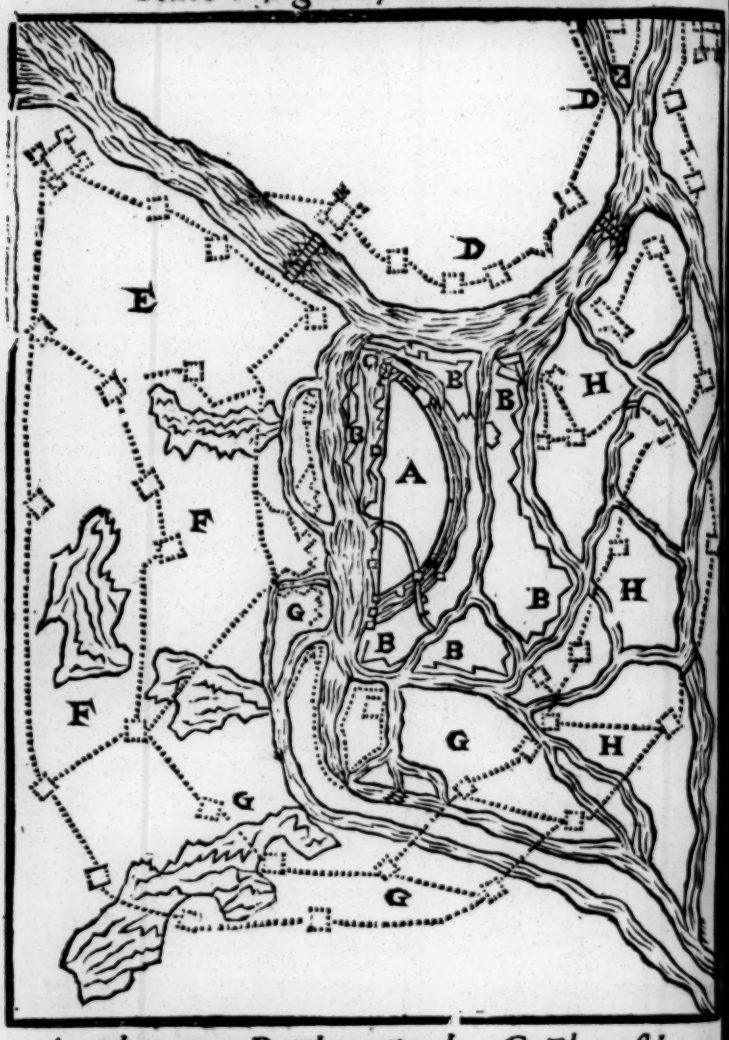
Grave beſieged by Prince Maurice.



A. *The town.* B. *The trenches which ſhut it up.*
C. *The trenches againſt releefs, with redouts round about.* G. *The trenches of approach.*
E. *Prince Maurice his quarter; and on the other-ſide of the river Count Erneſts quarter.*
D. *Count William his quarter.*
F. *Colonell Vere his quarter.*
H. *The trenches of the Spaniſh releevers.*

Sluce

Sluce beſieged by Prince Maurice.



A. *The town.* B. *The outworks.* C. *The caſtle.*
D. *The Iſle of Caſſant, with the trenches of the Hollanders, marked with pricks in all this figure.*
E. *Prince Maurice his quarter.*
F. *Count William his quarter.*
G. *Count Erneſt his quarter.*
H. *The quarters of Colonell Dort, and Colonell van der Noot.*

Of

of the defence of fortreſſes againſt the petard, and other ſurpriſes and treacheries.

Chap. IX.

THey which would prevent being ſurpriſed muſt have two conſiderations; the one concerning the attemptours, the other touching the fortreſſe.

Concerning the attemptours, you muſt (if poſſibly you can) have ſpies amongſt them; at leaſt you muſt keep ſentinels as farre diſtant from the fortreſſe as may be, that ſo the Enemie arrive not and be on your jack at unawares and without being diſcovered.

Touching the fortreſſe, you muſt not unfurniſh it to ſupply other places, ſo as that which remaineth be not ſufficient to keep and ſerve it. You muſt appoint the place of rendez-vous for the ſouldiers and citizens in fitting parts of the town, and that they ſtirre not from their ſeverall places without command from the Governour, or Sergeant Major, whatſoever pretence the enemie may make to charge the town in diers parts.

The lodgings of the Governour or Sergeant Major ſhould be about the middle of the town, near ſome ſpacious place, which muſt be the alarm-place of the town.

There muſt be iron chains at the corners of the croſſe ſtreets which are before the gates of the town: and you muſt batter down the fronts of the houſes which are juſt over againſt the gates, with canon ſhot: and place one corps-du-guard in the alarm-place, another about the middle

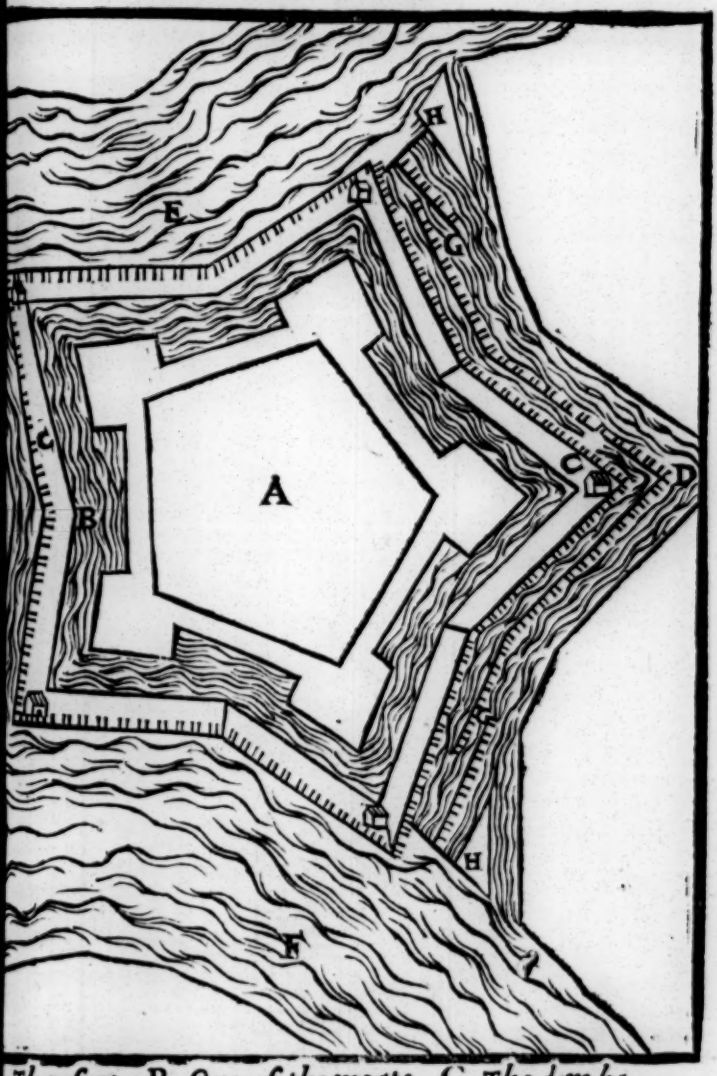
middle of the moat before the bridge, in the manner of a dovehouſe, into which the entrance is by a little draw-bridge; another on every gate of the town, into which none may enter but by a moving plank; and others round about the walls, near enough each to other: and theſe furniſhed with ſouldiers more or leſſe, according to the capacitie of the place, and the danger.

The corps-du-guard of the alarm-place hath the charge to make the rounds, counter-rounds and grand-round, and to place the ſentinels which muſt be at ſo near a diſtance, as they may heare and underſtand each others ſpeech, and ſpecially at the corners and the chanell holes, or drains of water.

You muſt place ſentinell-perdues without the town, which is the charge of the corps-du-guard which is without before the bridge. If there be a dam of earth between two moats round about the town, there muſt be guards placed in the night, for that is a moſt ſecure remedy againſt ſurpriſes. This dam of earth may be apprehended by the figure following:

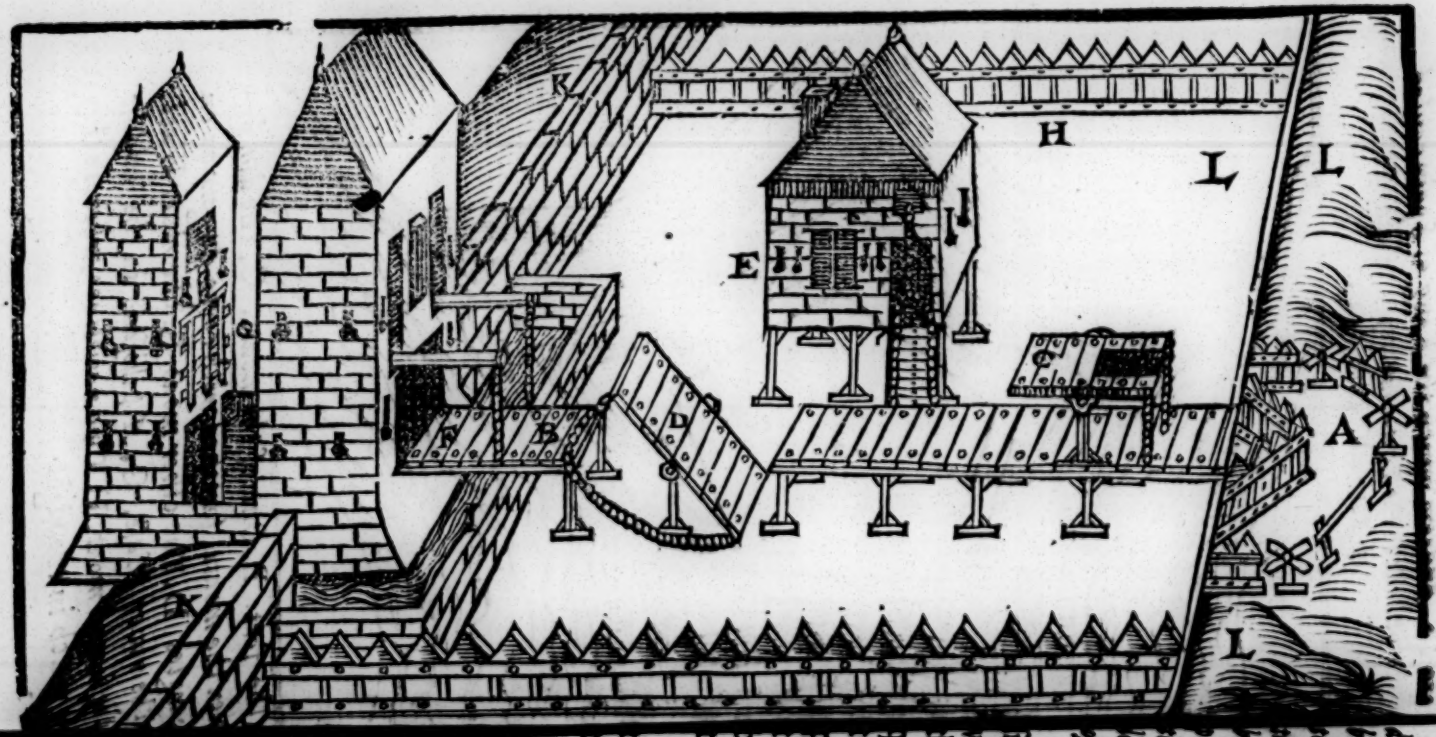
The

he fort S. Andrew which the King of Spain caused to be built in the Low-countreys, in the Isle of Bommell. anno 1599.



The fort. B. *One of the moats.* C. *The dam between the moats, fortified with corps-du-guards on the angles.* D. *The other moat.* E. *The river Wael.* *The river Mase.* G. *A palisado in the middle of the second moat.* H. *Two ravelines, wherein they kept watch in the night.*

The building of the gates of ſtrong rampierd townes ſhould be after this manner.



A. *The palliſado and the barres.* B. *The bridge dormant.* C. *The trap-bridge.* D *The turning-bridge. It were better to place it within the two towers* G. *without any other ſtay or prop ſave onely the tampin within the wall* E. *The corps-du-guard built within the moat.* F. *The draw-bridge.* G. *The portcullice. If the moat be drie, you muſt there make the two palliſadoes* H. *and ſink the ſmall ditch* I. *ſo low as the water, or very near it.* K.L. *The breadth of the moat.*

The gates and bridges muſt be flanked on both ſides, and on the upper part with loop-holes, which muſt be large enough to caſt water out at them, alſo pieces of timber, ſtones, granadoes, to quench the fire of a petard, to beat it down, and to kill the petardiers. But not ſo wide that ſurpriſes may be made by them, and there to give the ſcalado. Some place a portcullice there, hung by a rope, which is very fit to beat down the petards.

If you make half moons before the gates of the town, they will be the ſtronger, and the better ſheltred from the champain.

You muſt keep a light piece of Artillerie (but having a great calibre) at the corps-du-guard of the gate, which muſt be charged with carrouches and rubbiſh or ſtones, to turn it towards the place where the enemie ſhall give on.

The moats muſt be deep, having a palliſado in the middle; ſuch as have water need not be full, for that facilitateth the boats for the ſurpriſe.

The curtains and faces of the Bullworks muſt be ſeen and diſcovered by the flanks of the town, even by the low flanks, that ſo the canon may ruine all the ladders which might be attempted to be there raiſed.

The

The curtains muſt be high and out of danger of ſcalado, if it may be.

The holes by which the water comes in, or drains of filth paſſe out, ought to be very ſtrait; built of lime and ſtone, oblique within the wall, bound with ſtrong grates of iron, having a corps-du-guard or a ſentinell on the wall juſt over againſt the ſaid grate.

To be well aſſured of the gates and walls, the way is to appoint good guards, and thoſe diligent, ſtrong, and well placed: thoſe on the walls muſt be ſet preſently after the ſhutting of the gates before night; and they muſt not be diſmiſſed untill day, and untill the ſentinell on the ſteeple hath given the ſignall by the bell; and that no man knoweth the place where he ſhall be placed untill the very inſtant that he entreth the guard.

You may prevent treacheries knowing the cauſe; for either it proceedeth from the Governour who hath evill entreated, diſgraced, or offended the ſouldier in his reputation, perſon, or means, and provoked him to an evill diſpoſition; or it proceedeth from the ſouldier who is ambitious of honour and degrees, or covetous of greater means; or elſe from the citizens who are tyranniſed over by the garriſon.

This matter is ſo tickliſh, that the very ſuſpicion is puniſhable; but the better way is to diſſemble it, and to cauſe the matter to be further attempted; mean time doubling your rounds and making extraordinarie counter-rounds.

Of the defence of fortreſſes againſt ſieges.

Chap. X.

A Fortreſſe is ſaid to have reſiſted the enemies forces, when (having well defended it ſelf) it remaineth in its former libertie. To do this, you muſt draw into the fortreſſe whatſoever will be uſefull for you, and ruine all without which might endammage you; laying flat houſes, woods, barns, mills, hollow wayes, gardens, fountains, and whatſoever might batter you and command your defences.

Take good heed that the fortreſſe be well diſpoſed to reſiſt the aſſault of the enemie; which is, that the flanks (whether they be high or lowe) may diſcover, and not be diſcovered but by imbocking, that is, the canons mouth: that the countermines be well diſpoſed and convenient; that the counterſcarp (which is the buckler of the fortreſſe) be flanked, ſheltred, and ſpacious; that the caſemats be ſecured and well ſheltred, ſpacious, and fit to diſcover the plain of the oppoſite bullwork, and within the moat; that the ſally-ports be ſecured, ſheltred, lowe, and commodious; that the parapets be of earth or unburnt brick, and that the platforms for the ordinance be made handſomely and even, that ſo the pieces may eaſily be moved and removed into their places, ſpacious for the motions, pioners, and canoniers, and to contain the munitions.

The number of the ſouldiers of your garriſon you are to proportion according to the bigneſſe of the place, to the outworks which you would hold, to the labour of the retrenchments which

you ſhall think fit to make, and to the ſallies which ſhall be requiſite.

The Governour muſt be courageous and expert by long practice in aſſaulting and defending, having been beaten to ſuch ſervices.

The ſouldiers ſhould be men of choice, reſolute, ſtrong, obedient, and faithfull.

The quantitie of proviſions as well for victuall and medicines as armes, muſt be meaſured by the time which you ſhall conjecture that the ſiege may continue.

And their qualitie muſt be for the victuall all ſorts of grain, principally pulſe, powdred fleſh, ſalt-fiſh, cheeſe, butter, ſuet, oyl, ſalt, freſh water, wine, beer or cider, vineger, candles, torches, ſhip-pitch, good ſtore of coals, and plenty of wood for the ovens, for the corps-du-guard, and for houſhold uſes.

To tend them which are hurt and ſick there muſt be phyſicians, chirurgeons, & medicaments as well for contageous diſeaſes as thoſe which are ordinarie, and for wounds; and good ſtore of old linen.

A good quantitie of defenſive weapons, as corſlets, taſſes, morions, headpieces of proof, cuiraſſes, targets both proof and ordinarie: ſtore of armes offenſive, as well ſharp, as pikes, [a] lances halberts; as fire-weapons, as great and ſmall Artillerie, morters great and ſmall, muskets, harquebuſes a crock, callivers, cartouches, croſſebars ſhot, bullets of iron and lead, lanterns, creſſets lights, match, powder of a great, mean, and ſmall grain.

[a] *when they were in uſe.*

For the fires as well ſimple as compound for the ſimple, powder, ſaltpeter or ſalnitre coa

coal of willow or ſallow, campher, ſulphure, reſine, peter-oyl, linſeed-oyl, ſpike-oyl, tarre, Venice-turpentine, colofonie of Spain, black pitch, Greek pitch, Spaniſh pitch, wax, tallow, varniſh in the ſeed, maſtick, ſal armoniack, common ſalt, quickſilver, vitrioll, *aqua vitæ*, vineger, frankincenſe, wood in abundance, of vine-trees, fir-trees, pines, oſiers, hemp-ſtalks, of laurell, olive, and other fat and drie woods: for compounded fires which are uſed at an aſſault, pitcht ropes, fire-balls, granadoes, fire-wreathes, and fire-trunks.

Good ſtore of maſter founders, armorers, carpenters, maſons, forgers, miners, ſaltpeter-men, powdermakers, millers, cartwrights.

Inſtruments or tools to make carriages for the Artillerie and musket ſtocks; ſome to cut, as hatchets, hooks, ſawes, axes, adzes; to knock, as beetles, hammers, mallets, crows of iron, and handſpikes of wood; to quench the fire, as ladders, buckets of wood and of leather, portable ſoaes or tubs, ſquirts, iron hooks or cromes; to manage the earth, as cutting ſpades, hand-barrows, pickaxes, ſhovels, ladles, mattocks, wheel-barrows, tumbrels, ſcuttle-baskets, maunds.

Wood for the carriages, beds for the ordinance, palliſadoes, barricadoes, bridges, barques, ſauceidges, hurdles, gabions, piles, ſummers, joyſts and ſmall joyſts.

Metals; as copper, tin, lead, iron.

Materials for building; as ſtone, brick, lime, clay.

Good ſtore of linen cloth; cordage, tow, needles and thred.

You must agree with your friends without or some means to give them advertisements ordinarily when you shall be so straitly shut up, as you must have recourse to signes.

When the enemie shews himself to begin his enterprise and to besiege you, his Armie being to move divided by reason of the diversitie of occasions, you must labour to discommodate him as much as may be.

During the time that he shall be busied in shutting up the town, in taking and cutting off the passages, it might happen that (in distributing of his troops) some one may fall into your hands then lay hold on the time and occasion, of the situation, of the commoditie and favour of your outworks, never abandoning them but upon great constraint.

Then in ordering of his quarters you must have an eye, that even upon this occasion you might molest him; nevertheless if you conceive that by suffering him to go on securely, you should have means afterward to offend him to greater effect, you may defer it untill then: for those discommodities which succeed with losse of that which one possesseth, bring double dammage. Nevertheless you must take great heed not to stay so long as that he be fortified, whether it be in his trenches, quarters, or lodging of his munition and Artillerie.

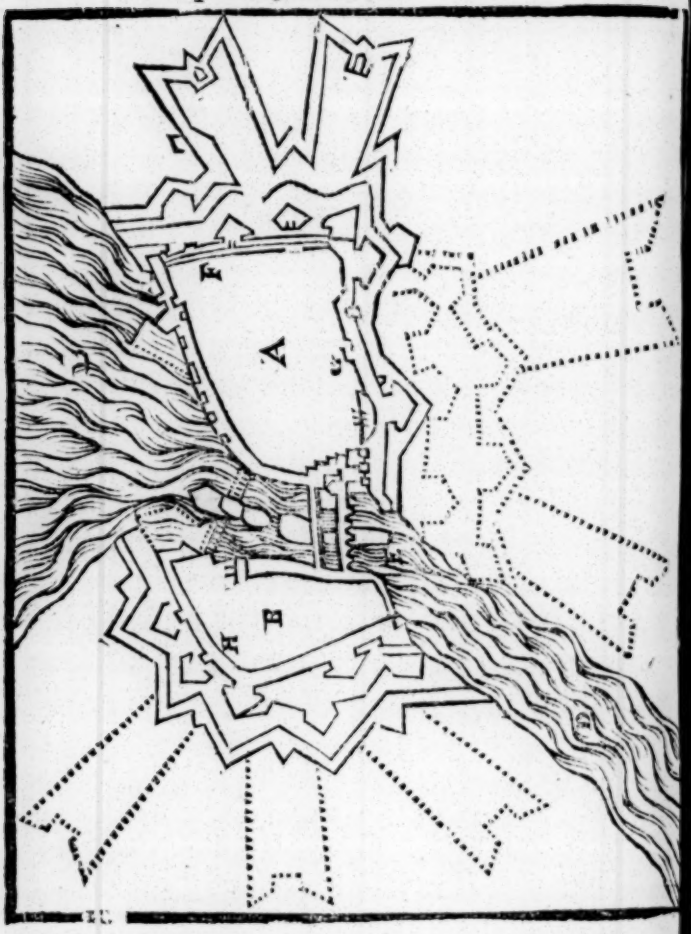
When he shall begin his trenches, and make platformes to plant his ordinance to batter you hinder him and molest him with all your power (which you shall hardly do if he hath earth and wood) observe the imperfections of his works whether they be straitned or scant, imbocked

not well ſheltred, ill flanked, ill conducted, ill guarded, and endeavour to make benefite thereof.

Draw him on by falſe appearances to aſſault you where you are ſtrongeſt, he taking you to be there weakeſt, and this by means of aſſured ſpies, under the name of fugitives or ſuch as come to him for refuge, or letters artificially written and ſuffered to be intercepted.

Compell your enemie to begin his batteries and trenches the furtheſt off from the town that poſſibly you can, by ſome retrenchments made without, defended by your half moons, counterſcarps and ramparts, made in ſuch manner as (the enemie taking them) they may not ſtand him in any ſtead againſt you; therefore all the trenches which you make without the counterſcarp muſt lay open all along to the view of the flanks of the ravelines, or of the town, as you may ſee in the figures following.

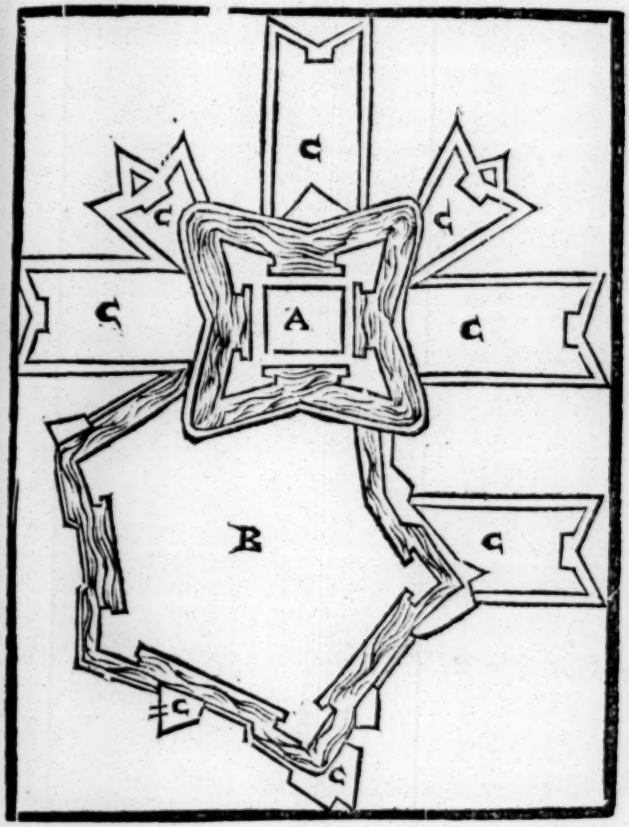
The plat of Geneva. 1611.



A. *The town.*
B. *S. Gervaſe.*
C. *The lake.*
D. *The river Rhoſne.*
E. *The Iſle and the bridges,*

The lines repreſent the fortifications made, and the pricks ſhew the deſignes of thoſe which are to be made.

The plat of Gulick, fortified by Prince Maurice after the taking of it.



A. *The castle.*
B. *The town.*
C. *The retrenchment made about the town.*

For your ſallies, take good heed to the time, whether it be fitting or contrarie; to the occaſion, as when the enemie is wet, ſtiff with cold, ſleepy, tired with labour, or when the guard is not in ſuch number, qualitie, and order as it ought. Keep your ſelf under the favour of your rampart and Artillerie, go on in good order and at unawares, by means of your ſally ports and counterſcarps, place your pikes and halberts to ſuſtain a charge, your muskets and callivers to give the charge, your fireworks and granadoes to break and diſſipate thoſe which are in the corps-du-guards and forts of the trenches, favouring the Infanterie by the Cavallrie, principally at the retreat, which muſt be well ſecured, being ſuſtained by thoſe which you have left as a reſerve on the counterſcarp. Be not ſo prodigall of your ſouldiers and munitions, that you ſhall not have ſufficient to guard the town and to ſuſtain the aſſaults. When the aſſailant ſhall begin to play his canon to batter your high and lowe defences, ply him on all ſides with your Artillerie from your Bullworks, ramparts, and cavalleroes; repair the ſhoulders of your flanks and parapets the beſt you can. Make new places of retreat and new flanks, principally concealed ones.

When he ſhall pierce your counterſcarp or open your moat, he will at the ſame time batter your walls; if he have forgotten nothing of that diligence which is requiſite, you ſhall hardly hinder nor offend him. But if he do miſtake, ſeize you on the occaſion, and have a watchfull eye, as if his Artillerie be diſcovered, you ſhall endeavour to diſmount his pieces, to kill his canoniers, to ſpoil his munitions; if it be ill fortified, make

a furious ſally upon it, to diſmount and nail it up, making uſe of your Artillerie and muskets.

If the aſſailant be well experienced, whileſt he is battering you to make a breach, he will batter all the low flanks which flank the place where he intendeth to give the aſſault (the high flanks being already taken off before the Artillerie was brought on the counterſcarp) but not before he become maſter of the moat, if it be drie, or of the counterſcarp if the moat be full of water; making the platform for the Artillerie upon the gallerie which pierceth the counterſcarp to enter the moat, keeping the boats and galleries to paſſe over the moat ready to lay ſuddenly when the time and occaſion ſhall be fit to give the aſſault; or elſe to plant them during the batterie under favour of the Artillerie and musket ſhot. Now, againſt all this, an expert Governour will keep his flanks hidden, which being opened unawares will much endammage the aſſailant, who (having made a breach) will cauſe it to be viewed by armed men (on which you muſt not ſpare your faulconet ſhot, nor that of the harquebus a crock) and ordinarily they are of the moſt able and valiant men.

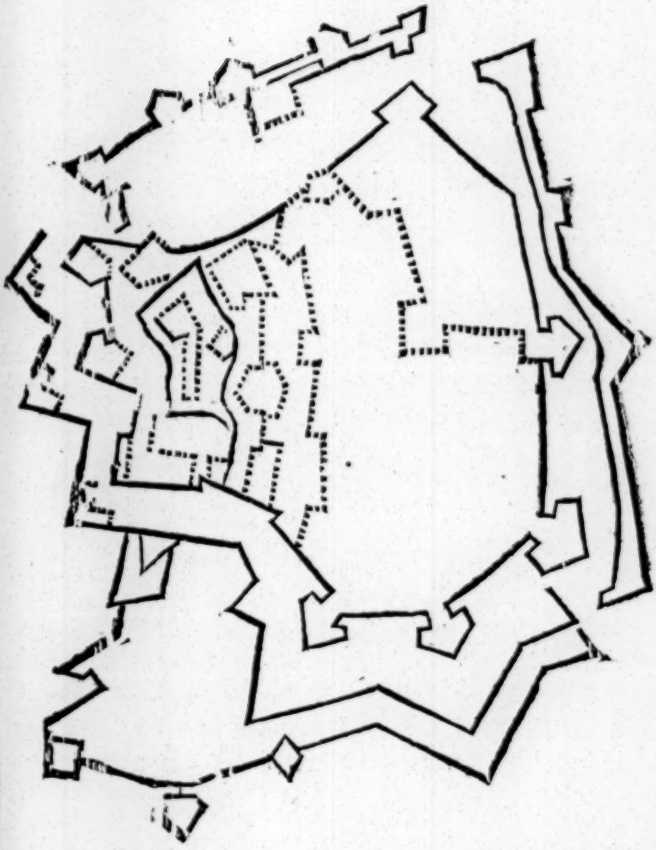
The breach being viewed, he will come to the aſſault, for which you muſt order your ſelf to give combat and reſiſt him, either by handblows or retrenching your ſelf, or both; by handblows, ſo ſoon as he ſhall begin to ſhew himſelf and become a mark for you, beginning to mount up to the breach, repulſing him by armed men, which you ſhall have ſelected before the aſſault, being reſolute and hardy, which muſt headſtrongly withſtand the firſt furie; which will either cauſe the enemie to retreat, or at leaſt you ſhall notably

miſchief

miſchief him. You are to make uſe of engines and inſtruments fitting to hinder the enemie from climbing up to the breach, as calthrops ſtrewed upon the place, rowling leiſts, beſet with nails and ſquibbes, morters, ſtone-pieces, and engines to caſt granadoes, fireballs, cartouches, &c. Mines muſt not be forgotten, nor fire-works, as fire-trunks, pots, moveable mines, fire-garlands, &c. having carefull regard how, when, where, and from whence you caſt them, doing it to good purpoſe.

If the enemie aſſault you by degrees, or that he make his batterie ſo leiſurely that he give you time to retrench your ſelf, make your retrenchment well flanked and commodious, in ſuch ſort that by it you may reſiſt him. To effect this, it ought to be difficult to be expugned, ſo flanked as it may be defended on the front and flanks, facile for ſallies, having before it a broad and deep moat with a counterſcarp and covert way, having the rampart ſtrengthened by palliſadoes which go along the outſide of the line, encloſures of the camp, and gabions: And by this means you ſhall draw the buſineſſe to a great length: for he muſt draw up his Artillerie upon the breach, after that he be lodged upon it, he muſt make a new batterie, a new overture, new ſaps, mines, and chambers, which will give you leiſure to make new retrenchments, and to gain and prolong the time, as the Hollanders did at Oſtend, and in many other places.

The Plat of Oſtend, with the retrenchments. 1604.



The lines repreſent the fortreſſes of the town, and the pricks the retrenshments.

Of

Of the defence of fortreſſes againſt famine.

Chap. XI.

THis defence may be reduced to three heads, the proviſion, the conſervation, the diſtribution. For the proviſions, you muſt have regard to the quantitie and qualitie. The quantitie is judged by the perſons ordinarie and extraordinarie, which may be ſhut up within the fortreſſes during the ſiege, the time that the ſiege may continue, and the portion which every one muſt have; beſides that which waſteth by time, and by the imperfection of naturall things. The qualitie is for nouriſhment (as meat and drink) for diſeaſes, and for wounds. To conſerve the proviſions, regard muſt be had to the inconveniences which may happen to the magazines, by means of thoſe without by their Artillerie, by fire, by ſome inundation or corruption, or leaſt ſome traitour ſet it on fire, or poiſon it, or that ſome vermine conſume it not, or that the officers ſteal it not, nor ſpoil it, nor give it away.

For the diſtribution, regard muſt be had to the time, to the perſons, and to the quantitie. To the time, when you ſhould begin to open the publick proviſions, which is, when the private are conſumed, knowing the perſons and munitions of every family. To the perſons, who for the difference of their condition muſt be diverſly dealt with, according to their eſtate and qualitie. To the quantitie, which muſt be meaſured by that which every day one perſon ſhall neceſſarily require for nouriſhment; having regard to their ſex, age, exerciſe, and diſpoſition.

Of releeving places beſieged.

Chap. XII.

IN the releeving of fortreſſes, you muſt conſider the means to effect it, or to hinder it.

To effect it, either openly or ſecretly, having regard to the place, to the enemies retrenchments, and to the releef.

To the ſituation of the place, which may be commodious and facile by reaſon of the open champains and freedome from impeachments; or diſcommodious and difficult, by reaſon of bogs, rivers, woods, and mountains.

To the enemies forts which are about it, as defences by palliſadoes, gabions, moats, trenches, and redouts; who may either remain within his trenches, or go forth into the champain to beat off the releef.

For the releef, it muſt be guarded by a good convoy, becauſe otherwiſe the enemie might charge and rout it, pillaging the munitions, hindring the return, cutting off their way, being the ſtronger. You muſt know the means, the time, the ſtratagems, and the paſſages by which the releef may be conducted and introducted into the place, carrying with you ſufficient proviſion of things neceſſarie, for the victuall, for the armes, and for all that concerneth the furtherance and execution of the releef, as pioners, boats, barks, and other engines, to paſſe rivers and marſhes.

You muſt make good choice of the troop and groſſe of ſouldiers which ſhould execute the releef, as, that the ſouldiers be well ſelected out of the ancienteſt, and that the officers be able and willing courageouſlly to perform all that is to be done,

done, to execute the enterprise infallibly, or to retreat honourably, or there to sell their lives at a dear rate.

A releef may be hindred, either by attending it within the trenches, or else by advancing towards them to give them battaile, and to oppose their passage, abandoning the siege to go with all the forces, or with part of the Armie, leaving (in the mean time) the siege maintained, and the trenches manned.

Of French Artillerie.

Of foundings, mixtures, and measures of ordinance.

Chap. XIII.

IN the founding of ordinance, to 100 pound of fine copper, you are to adde 20 pound of bell-metall; or for want of bell-metall, adde 10 pound of soft tin.

Or else, to 100 pound of copper, adde 10 pound of latin, and 8 pound of soft tin.

In the founding of ordinance, in regard of the waste, in every 6 pound of metall you are to adde 1 pound over weight.

A singular care must be taken of the melting and mixing of metals, for the inward neatnesse of the pieces. To this end the materials must be good, so must the earth for the moules; being well beaten and through wrought with hair and flocks. The moules, models and cilinders well nointed and greased with good tallow, and bound with hoops of iron, well and throughly nealed, well placed and set. The trunions must be so justly

ly placed, as the piece may be as in ballance on them, weighing almoſt equally forwards to her muzzel, as backwards towards her breech, that ſo a canonier may without trouble mount or imbaſe her.

The piece muſt be ſtrong about the trunions, for thereabout ſhe ſuffereth the greateſt force, and firſt moving.

The touchhole muſt be of ſteel, that ſo the piece be not made unuſefull ſo ſoon as if it were of metall, and muſt be cloſe to the breech.

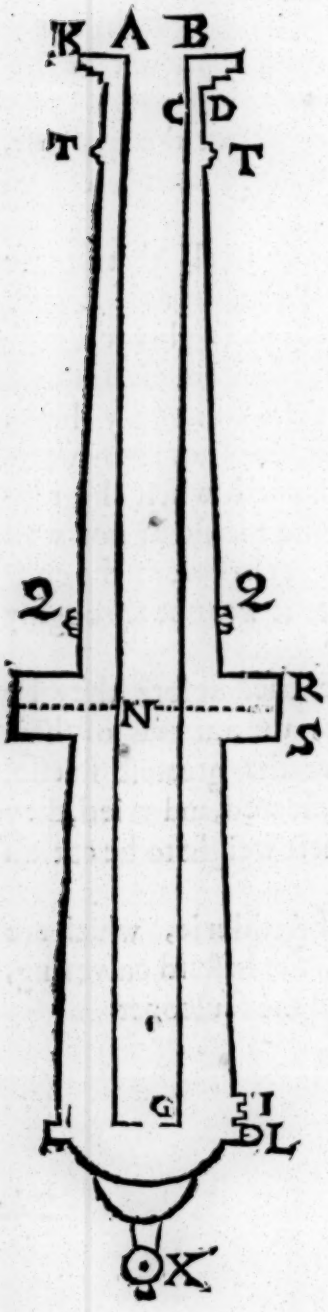
The pieces muſt be well repaired, cleared, and tried, having regard that there be not any chink, hole, hony-comb, crack, rift, flaw, or crany within them; which uſually hapneth when the metall is run too cold, or that the moule be not well heated, or that the tin was put in before the copper was well melted, or that it was not throughly mixed or incorporated.

The pieces ought to be tried before they be mounted on their carriages, the muzzels of them mounted, for ſo they bear the greateſt ſtreſſe. When they be ſo repaired, cleared, and tried, they are to be weighed, and their weight to be cut on their breech.

There be ſix calibres of Artillerie, which are the canon, the culvering, the baſtard culvering, the minion, the faulcon, and the faulconet.

The

The names of the parts of a canon.



A. B. *The diameter of the muzzel, concave or bore of the piece.*

C. D. *The neck.*

G. I. *The thickneſſe of the metall at the touch-hole or chamber.*

G. B. *The length of the concave or cilinder of the piece.*

R. S. *The diameter or thickneſſe of the trunnion.*

K. *The muzzel ring or freeſe.*

N. A. *The vacant cilinder from the chargeſe the guide of the ſhot.*

N. X. *The chamber.*

L. *The baſe ring, and the ſight upon it.*

G. X. *The breech.*

X. *The caſcabell or pummell.*

T. *The aſtragall or coronice ring.*

Q. *The reinforced ring.*

I *The touch-hole.*

Of weights.

The pound (mark weight) consisteth of two marks, the mark of eight ounces, the ounce of eight drams, the dram three penie weight, the penie weight foure and twenty grains.

This weight cannot be troy weight, for that hath but 20 penie weight in the ounce, and this hath 24.

Of measure.

The fathom containeth 6 foot, the foot 12 inches, the inch 12. lines.

But the custome in England is to divide the inch into eight equall parts, which I follow.

The measures of the parts of a canon, and the use thereof.

The diameter of the bore of the canon is six inches and one sixt part of an inch.

The diameter of the bullet six inches.

The vent or aire for the bullet to play one sixt part.

The bullet weigheth 33 pound and one third part, which is called the Calibre of the canon.

The metall is two inches thick at the neck, and six at the breech.

The cilinder or concave is nine foot long, and equally wide in each part of it.

The whole canon is somewhat longer then ten foot.

Our English founding of ordinance differeth from the French proportions, as appeareth in Mr Nortons Gunner, page 53.

The diameter of the trunion is six inches.

The vacant cilinder or guide is five foot and an half.

The reinforced ring is distant from the muzzell ring foure foot and a half.

The thickneſſe or height of the muzzell ring is five inches.

The coronice ring is within half a foot of the muzzell ring.

The ſight of iron is placed on the flat baſe ring.

The metall of the piece weigheth about 5600 pound.

Her carriage for the field is fourteen foot long, and the axletree ſeven.

The canon mounted on her field carriage is almoſt nineteen foot long.

The powder for her charge weigheth eighteen or twenty pound.

The ordinarie obſervation for all pieces is, That the charge of powder be at leaſt the moytie of the weight of the bullet, and ſo to two third parts, which is rather better.

The canon may be laden ten times in an houre, and 120 times a day.

She ſhoots point blank almoſt ſix hundred [a] paces.

Her platform muſt be fifteen foot broad, and 20 foot long, for her reverſe. The formoſt ten foot are to be of plank, and the reſt of hurdles, if plank be wanting.

There muſt be twenty horſes to draw a canon. A waggon drawn by foure horſes carrieth a thouſand or twelve hundred pound weight; it is about ten or twelve foot long in the body, and the

[a] *Obſerve that pacts are here underſtood to be onely ſteps: otherwiſe it were impoſſible.*

the waggon with the horſes about fifty foot; and their breadth about the axletree is [b] ſix foot.

One waggon carrieth three and thirty canon bullets.

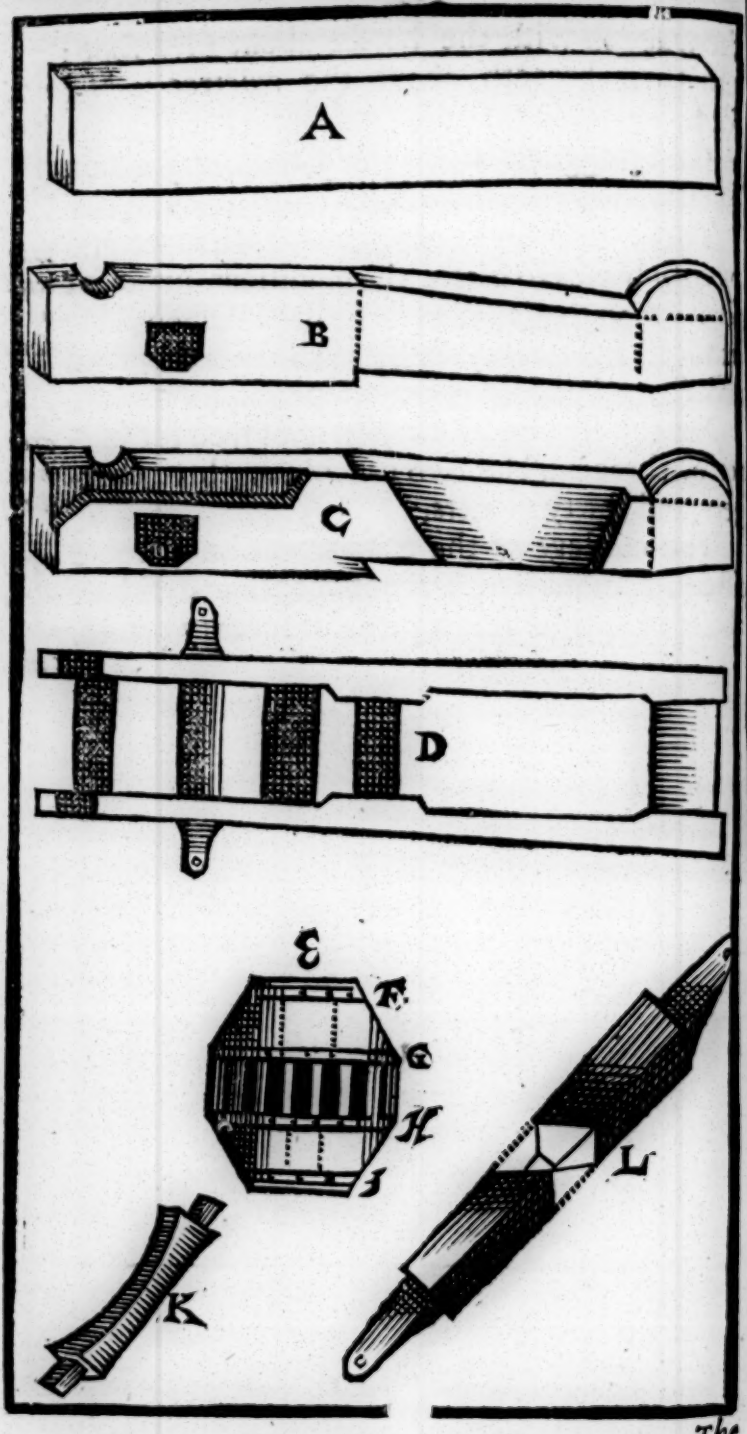
There muſt be ſix waggons, and foure and twenty horſes to carrie the munitions ſufficient for a canon to play one whole day, namely, one hundred and twenty bullets, and two thouſand and foure hundred pound of powder.

For the ſervice of a canon imployed for batterie, there muſt be two canoniers, three chargers, and thirty pioners.

The cordage of the canon muſt be a [c] cable fifteen fathom long, foure inches and a half about: which will weigh about ſeventy pound.

[b] *The breadth of the carriages, and of the waggons ought to be alike at the axletree, becauſe they are to go in one and the ſame rut.*

[c] *This cable is not uſed in all countreys.*



The

The names of the parts of the carriages and wheels for the Artillerie.

A. *A plank for the cheeks or ſide of the carriage 14 foot and an half long, one foot and an half thick, and one foot eight inches broad for the canon.*

B. *The outſide of the cheek.*

C. *The inſide of the cheek.*

D. *The carriage being* [1] 13 *inches broad within the work at the head, and* 18 *at the tail.*

E. *The axletree 7 foot long.*

F. *A ſpoke 14 inches long between nave and felloes, 4 inches and an half thick in diameter.*

G. *The nave of 20 inches long from* E. *to* I. *and as much in diameter over againſt* G. *in* F. 17. *and in* I. 14.

H. I. *Foure hoops of iron.*

[1] *Note that the canon, a little before, is ſaid to be 6 inches thick of metall at her breech, and the diameter of her bore ſix inches and one ſixt part: ſo then, the carriage ought to be ſomewhat above 18 inches wide for the breech, bed and trains; and ſo the tail muſt be ſo much the wider of courſe.*

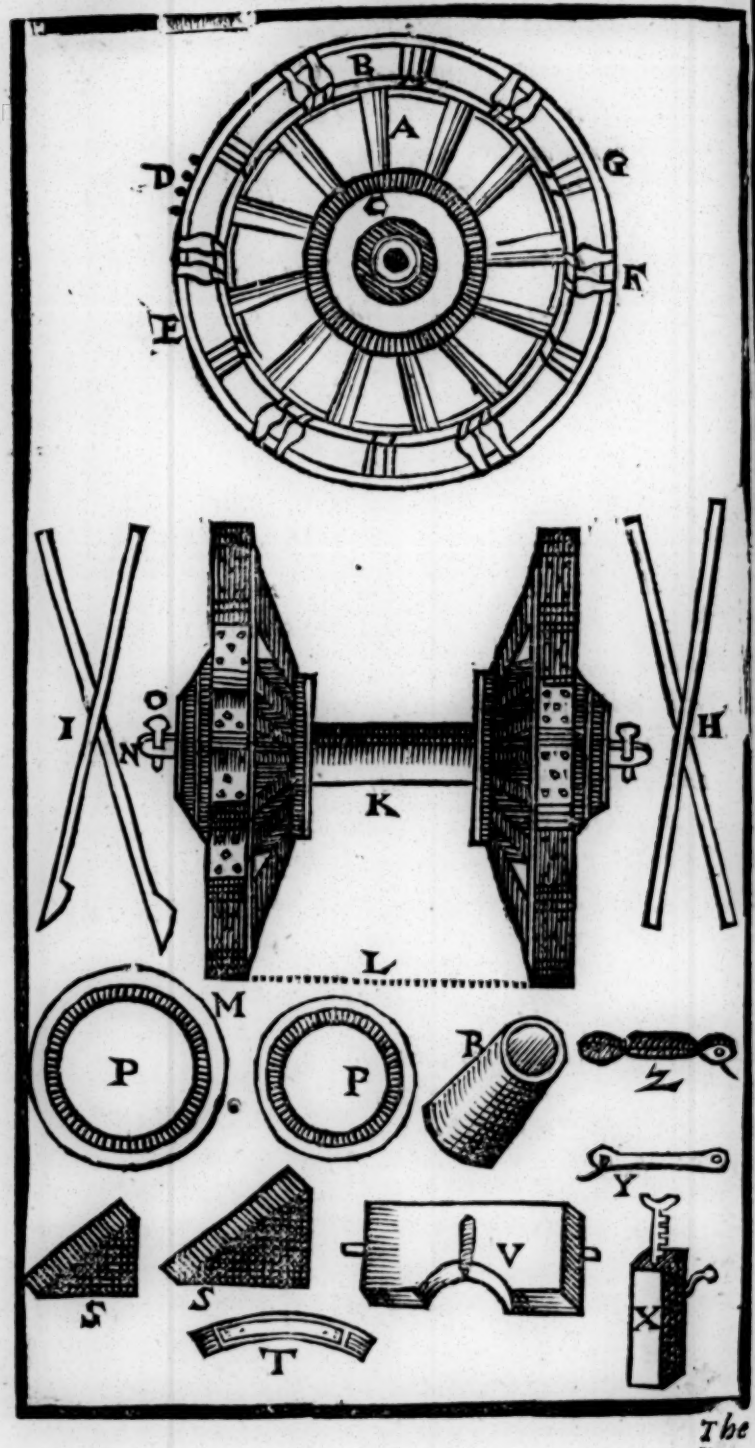
A
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In the figure S.

A. *The cheeks.* B. *Tranſomes.* C. *Bolts.*
D. *The axletree.* E. *Upper plates.*
F. *Hooks for draught.* G. *The clowt.*
H. *The hole in the arm of the axletree for the lintſpin.*
I. *The end of the axletree.* K. *The ſhafts.*
L. *The ſhaft-bolts.* M. *The thill-bolt.*
O. *The thill.* Q. *The reſt.*
N. *The forelock of the thill bolt.*

In figure T.

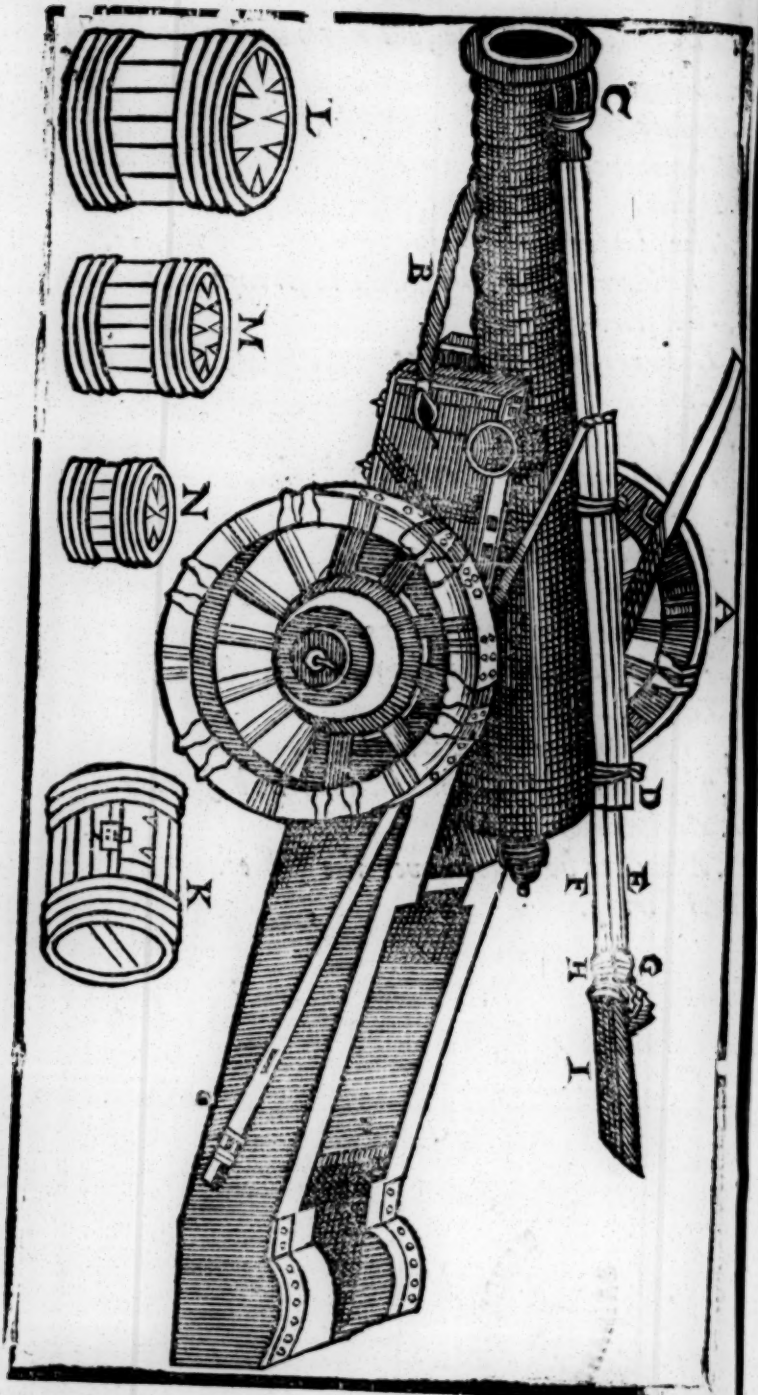
1 *Holes for the trunions, 21 inches diſtant from the head of the carriage to the center.*
2 *The capſquire, or plate over the trunnion.*
3 *A hook for draught.*
4 *Nails with ſmooth heads.*
6 *Forelocks for the bolts that pin down the capſquire.* 7 *The nether plate.*
8 *Mortais for the axletree.* 9 *Bolts.*
10 *The upper plate.* 11 *The hole for the bolt.*
12 *The thill.* 13 *A hook to faſten the rudſtay, which goeth upon the horſeback.*
14 *The hole for the forelock key.*
15 *The thill plate.*
16 *The forelock, pinnes, and chain.*
17 *The cramp-iron of the chain.*
18 *The tail-plate of the carriage.*
19 *The bolt-hole.*



The

The wheels are five foot high being ſhod.

A. *Spokes.*
B. *Felloes.*
C. *The nave.*
D. *Nails.*
E. *The plates for the ſhoing or tire of the wheels.*
F. *The barres over the felloes to ſtrengthen them.*
G. *The ſtirrops.*
H. *Leavers or handſpikes.*
I. *Crow leavers.*
K. *The axletree.*
L. *The diſtance between the wheels.*
M. *The rut of the wheel.*
N. *The end of the axletree.*
O. *The lintſpin.*
P. *The great and ſmall hoops.*
R. *The boſſe of iron for the nave.*
S. *The great and little coins.*
T: *The dowledge of the wheel.*
V. *The ſight rule, to be placed upon the baſe-ring.*
X. *An handſcrue.*
Y. *A bar, to be placed over the felloes.*
Z. *A ſtirrop.*



A.

A. *A canon mounted.*
B. *The cable.*
C. *The head of the ladle and ſponge.*
D. *Thongs to tie the leavers, ladle, and ſponge.*
E. *The ſtaffe of the ſponge.*
F. *The ſtaff of the ladle.*
G. *The ſponge.*
H. I. *The ladle of braſſe.*
K. *The budge-barrell.*
L. *A caſque of corn-powder.*
M. *A caſque of fine powder.*
N. *A barrell of priming-powder.*

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of

Of the great culvering.

The diameter of her bore is foure inches and five ſixt parts.

The diameter of her bullet, foure inches, and two third parts.

The bullet weigheth 15 pound and a quarter.

Her metall at her neck is one inch thick and three fourth parts, and at her chamber foure inches and five ſixt parts.

Her cilinder is nine foot & foure inches long.

From the center of the trunions to the touch-hole is three foot ten inches.

The vent or aire for the bullet to play is one ſixt part.

Her charge of powder is ten pound weight.

She ſhoots point blank [a] 800 paces.

She may be laden ten times in an houre, and 120 times in a day.

Her metall weighs about 4000 pound weight.

She requireth 17 horſes to draw her.

A waggon carrieth 66 of her bullets.

She muſt have 120 bullets a day, and 1200 pound of powder; and for the carriage of her munitions for a day, three waggons and twelve horſes, 24 pioners, two ordinarie canoniers, and two extraordinarie.

The cordage of a great culvering is a cable of twelve fathom long, and foure inches about, weighing about 55 pound.

[a] *Underſtand paces as hath been obſerved before for the canon.*

Of the baſtard culvering.

The diameter of her bore is three inches and three fourth parts.

The diameter of her bullet three inches and two third parts.

The

The vent or aire for the bullet to play one welfth part.

The metall at her neck is one inch and one ourth part thick, and at her chamber three inches nd three fourth parts.

Her cilinder is eight foot ſeaven inches in length.

From the centre of her trunions to her touch-ole is three foot ſix inches.

Her bullet weighs ſeaven pound and a quarter, nd her powder five pound.

She ſhoots point blanck [b] 1000 paces.

She may be laden 140 times in a day, which is bout twelve bullets in an houre.

Her metall weigheth about 2500 pound.

She muſt have thirteen horſes to draw her.

A waggon carrieth 140 of her bullets.

Her munitions for her to play one whole day, re 140 bullets, 700 pound of powder.

She muſt have two waggons and eight horſes o carrie her munitions for one day, twelve pio-ers, and two canoniers.

The cordage of the baſtard culvering is a cable of [c] ſix fathom long, and three inches and an half hick, weighing about 45 pound.

[b] *Obſerve as before.*

[c] *Here muſt be a miſtake: for if the cable for the great culvering of 12 fathom long, and 4 inches hick, weigh but 55 pound, how can this, being but 6 fathom long, nd 3 inches and a half thick, weigh 45 pound? I conceive the miſ-ake to be in the length of the cable, which ſhould be longer, rather 9 hen 6 fathom.*

Of the minion.

The diameter of her bore is two inches and hree fourth parts.

The diameter of her bullet is two inches and wo third parts.

The

The vent for the bullet to play is one twelfth part.

Her metall is one inch thick at her neck.

At her breech two inches and three fourth parts.

Her cilinder is eight foot long.

From the center of her trunions to her touch-hole is three foot five inches.

Her bullet weighs three pound and an half and her charge of powder two pound and an half.

She ſhoots point blanck 1400 paces.

She ſhoots 160 bullets a day, which is about thirteen each houre.

Her metall weighs about 1350 pound.

She muſt have nine horſes to draw her.

A waggon carrieth 226 of her bullets.

She muſt have 160 bullets, and 400 pound of powder for a dayes batterie.

One waggon carrieth her munitions for one day.

She is ſerved with ſix pioners, and two canoniers.

Of the faulcon.

The faulcon may be laden fifteen times in an houre, which is 180 times a day.

Her bullet weighs one pound and an half, the charge of her powder one pound, and her metall eight hundred pound.

She muſt have five horſes to draw her.

One waggon carrieth her munitions for two dayes.

She is ſerved with foure pioners, and one canonier.

Of

Of the faulconet.

The faulconet may be laden about 250 times a day, which is about twenty times each houre.

Her bullet weigheth three quarters of a pound, and her charge of powder an half pound, her metall five hundred pound.

One waggon carrieth her munitions for 3 dayes.

One horſe draweth her.*

She is ſerved with 4 pioners and one canonier.

*If the faulcon which weigheth eight hundred pound, requireth five horſes to draw her, the faulconet weighing five hundred pound, will require three horſes.

Of the harquebus a croc.

The harquebus a croc may be laden 300 times a day, which is 25 times each houre.

Her bullet weigheth 3 ounces, and her charge of powder 2 ounces.

One waggon carrieth 14 hurdles of 10 foot long and 6 foot broad. It may carrie 12 doſen of pikes, which are uſually about 18 foot long. It carrieth 300 ſhovels, pickaxes, or ſpades.

Theſe waggons are made with boards on the ſides and bottome, like tumbrels, to pack up thoſe inſtruments within them, and alſo many other ſmaller ones, as ſawes, chopping-hooks, hatchets, hammers, chizzels, crows of iron.

It may carry 10 pieces of a bridge of bul-ruſhes. Theſe pieces are made after this manner, every piece hath 10 bundles of cane-reeds bound together with cords as much as is poſſible, and then well ſewed within a courſe cloath; ſo as they become 10 ſacks full of reeds; being a foot in diameter, and 6 foot in length. They are faſtned with good cords upon a hurdle of 10 foot long, and 6 foot broad.

How

How the Artillerie is to march.

Before the Artillerie do march, certain commiſſaries, canoniers, the waggon maſter, and certain pioners muſt go before to accommodate the wayes.

The ſmall pieces muſt march before, then all the greater ones, then three wagons; whereof the firſt is to carrie a barrell of greaſe, and all the ſmiths tools in a cheſt. The ſecond, all the wheelwrights and carpenters tools, the gins the leaver and handſcrue to raiſe the pieces. The third is to carrie the anvile, the bellows, and other ſmiths tools. Then follow the conductours and canoniers to guard them.

Then the waggons laden with bullets, powder, and other munitions.

All the canoniers muſt accompanie the ordinance, every one near his own piece.

The Artillerie and munitions muſt be quartered in a place ſufficiently ſpacious, which muſt alwayes have the front towards the enemie.

Round about the Artillerie and munitions there muſt be a place large enough to contain the guards.

Of the offices of militarie men.

Chap. XIIII.

Of the ſouldier.

He muſt be armed with ſuch armes as his captain ſhall appoint him; for he knoweth better then himſelf what armes are moſt fit for him.

He muſt ſhew himſelf deſirous to make manifeſtation of his courage, but muſt not therefore at any time go out on any action without the expreſſe command of his chiefs, making it appear that he is diſcreet as well as valorous.

His eating and ſleeping muſt be regulated according to his leiſure, not according to his will.

He muſt not be a mutinier, neither muſt he change his companie without great reaſon, nor depart without leave obtained and authenticall certificate of his faithfull ſervice. Good ſpirits are not known but upon occaſions, which offer not themſelves every day: beſides that, a private ſouldier which deſireth to attain to ſome place of command, hath need of a long time, to gain experience ſufficient to render him worthie, and to make his abilities known to ſuch as can advance him.

He muſt ſtudy to know the uſe and managing of his armes, the duties of a ſouldier, the motions of companies, his marching, his quartering in the field, to make his guards, and place his ſentinels, to underſtand the beats of the drum, to make a guard for his ſuperiours.

The ſouldier ſhould not enroll himſelf under a captain of mean reputation, or one that is cove-

tous, leſt he looſe his labour and time, to prevent changing. So alſo a Captain ought not to receive a ſouldier without knowing him, leſt he happen on ſome mutinier, coward, feeble or diſeaſed perſon.

Of the dutie of the Lanſpaſſadoes and Appointees.

They are to eaſe the Corporals, and to be at their Lieutenants and aides in time of danger: they are alſo rounders and ſentinell-perdues, in caſes of neceſſitie, but not otherwiſe.

Of the Corporall.

He hath the command of his ſquadron, and is to teach them whatſoever is neceſſarie for a ſouldier to know and do. He is to lodge them by cameradoes, to prevent quarrels and diſorders by admoniſhing them, or acquainting the Captain therewith; for to chaſtiſe them he hath no power, unleſſe it be by vexing them with ſtanding ſentinell. He muſt have a liſt of his ſouldiers, and muſt give notice to his Sergeant when a ſouldiers name is croſſed out. He is to diſtribute the victuall, bullets, match, and powder to the ſouldiers of his ſquadron; to know which are the moſt experienced of them, that ſo they may be imployed in the watches and actions of greateſt importance; to have an eye to their lives and manners; to take care of the baggage and money of ſuch as are hurt and ſick, cauſing every man to husband his pay taken at muſters. Being on the guard, he muſt be vigilant and ſuſpicious; he muſt place the ſentinels where the Sergeant major or his Captain ſhall have directed him: he muſt releeve them

him

himſelf, and muſt ſend a Lanſpaſſado, or one whom his Captain ſhall appoint, whereof he is alwayes to have two, to viſit them. He muſt attend his rounds and counter-rounds before his corps-du-guard, which muſt give him the word: and were it the Generall of the Armie himſelf, the ſentinels ought not to ſuffer him nor any perſon to approach them, without charging their pike or preſenting their musket, the match cocked; and if it be the grand-watch or other troop, to ſtay them untill the Corporall come; who muſt never go alone out of his corps-du-guard, but with three or foure to accompanie him. He muſt advertiſe the ſentinels how to demean themſelves upon the diſcoverie of the enemie, either to give an alarm, or elſe to give notice without making any noiſe. The ſentinels muſt never remove themſelves, untill the Corporall releeve them, or that they be conſtrained by the enemie; and in ſuch caſe they are to retreat to the corps-du-guard, as the corps-du-guard (being forced) are to retreat to the quarters, according to the Captains or Sergeant majors inſtruction.

He is to viſit the ſouldiers entring the guard, to know whether they be ſufficiently provided of powder, bullets, and match, viz. one pound of powder, two pound of bullets, and five fathom of match.

He muſt cauſe reſpect to be given to the corps-du-guard, and ſilence to be kept, whether it be about the gates or the walls, that ſo the noiſe may not hinder the hearing of the advertiſements of the ſentinels. He is to walk before his corps-du-guard, or to cauſe a Lanſpaſſado

to do it. He must keep fire day and night, to light the matches, and must take care to see the corps-du-guard provided of wood, coals, and candles.

Of the Sergeant of a companie.

He ought to be able to read, write, and cast account, if it may be; to keep accounts of his souldiers, how many be pikes, and how many muskets; the best armed and most courageous of them he is to place in the first rank. It is his dutie to cause the souldiers of his companie to observe discipline both politick and militarie, and all kindes of commands given by the superiours, whereof he is to give them knowledge.

He is to instruct them in the managing of armes, in the keeping of rank and file, and that in such order as the Sergeant major shall appoint.

He must take care of the armes and munitions, to distribute the powder and match to the Corporals, to place his corps-du-guards and sentinels with his corporals, in such places as his Captain or Sergeant major shall have appointed; often visiting them, to see whether they perform their duties, imploying none thereunto but such as are capable, for otherwise an alarm might be often given without cause; he must make frequent rounds; and if he finde a sentinell a sleep in the field, he is to commit him into the hands of justice.

When the companie marcheth, if a souldier step out of his rank, he is to compell him to his place with the staff of his halbert.

Whether he be in the field or in garrison, he must take care there be no want of victuall, and if

f there be want, to demand it of the commiſſarie or his deputies, then he is to diſtribute it to his Corporals, and they to the ſouldiers.

He muſt every evening fetch the word at the Sergeant majors lodging, and carrie it to his Captain, Lieutenant, Enſigne, and Corporals.

He muſt order his companie both for their marching, embattailing, as alſo for their watch; but for their encamping, that belongeth to the Quartermaſter.

He muſt place his guard at the houre appointed, and having ſhewed his Corporals the places for the corps-du-guards and ſentinells, and there placed them, he is to give the word ſecretly to the Corporals, according as he ſhall have received it from the Sergeant major.

Of the Enſigne.

It is the Enſignes dutie to carrie his colours whereſoever his Captain, or (in his abſence) the Lieutenant ſhall command him, whether it be in aſſault or in battaile, having no regard to the danger, but to the means to attain it.

Entring the guard, lodging, in fight, or making *alto*, he is to bear his colours on his ſhoulder, advanced; but when he marcheth in champain, he may cauſe them to be born by one of the braveſt ſouldiers, to which end he is always to have two of them near him.

The company marching in their order, the Enſigne is to be in the middle; but in aſſault, ſcalado, or disbanded fights, he muſt be at the head.

In battaile the Sergeant major appointeth him his place of march, and he ought rather to die then to quit or abandon his colours, for by looſing

sing them, he dishonoureth both himself and his companie.

He must get the love of his souldiers, that so they may follow him with the better courage.

If the Colonell command him to plant his colours in the field, he is to do it; but he ought rather to acquaint his Captain therewith. And in case of alarm, without expecting any command, he must repair to the place of armes.

The place of armes of a Companie is before the Ensignes lodging, where all the souldiers must assemble in armes; and of a regiment, it is before the Colonels lodging.

Marching in battalia, he is to march courageously without bowing himself to any, unlesse it be to his chief commanders, before whom he is to encline the head of the colours, more or lesse, according to their degree, without making a shew of raising his hand to his hat, or bowing his knee.

Of the Lieutenant.

All the Lieutenants ought to be as able as the Captains, whom they represent, seeing that in their absence they have the same charge and authoritie: and ofttimes the Captains are young Gentlemen, descended from illustrious and valorous persons, which have courage sufficient, but want strength and skill He must keep the Ensigne, drum, and all the officers and appointees near him, to make use of them as occasion shall serve.

He must neither take on, cashier, nor punish any man in the presence of his Captain, for at that time he hath no authoritie, and all that he doeth is

is by permiſſion and commiſſion; but in his abſence he is to be obeyed as the Captain.

His companie being ordered for combat, if his Captain be abſent, he is to lead them; but if he be preſent, he muſt keep on the rear, and place his two Sergeants on the flanks, that ſo every man may keep his rank, and fight reſolutely.

At an aſſault he muſt aſſiſt the Enſigne, and lead him to the place of combat, which he muſt have viewed beforehand.

It is his charge to obſerve the actions of the Corporals and Sergeants, to hold them to their duties, and to cauſe them to provide what is neceſſarie for the companie, and to aſſiſt them where he ſhall ſee cauſe.

Of the Commiſſarie.

The office of a Commiſſarie of ſouldiers is to cauſe the muſters to be taken and moneys to be payd, to receive the oath, and to give the quarters for the lodgings.

Of the Captain.

A Captain ought to be expert, diligent, and courageous; he muſt know the duties of all that are under him, but principally his own.

His office is to lead his companie whereſoever his Generall or Colonell ſhall command him.

His functions are, to give the orders to his Lieutenant and Sergeants for the marching of his companie, be it three or five in rank, placing his muskets in the front and rear, and the pikes in the middle. Or in battaillon, placing the muskets on the flanks of the pikes.

He must teach them how to fight, be it in surprise of an embuscado, in approach of cities, in assaults, encounters, skirmishes, or battailes. To lead them on prudently, labouring to bring them off with as much glorie, as he shall have courageously brought them on.

The Captain must alwayes be at the head of his companie, certain paces advanced before them, unlesse it be to joyn in battaile, for his sole person were not able to sustain the shock of the enemies pikes, but then he is to place himself in the first rank of his companie.

He must cause his souldiers to be taught the use of their swords, pikes and muskets, teaching them how to order themselves in battalia, and to rally themselves being disbanded, either by occasion of an *alto*, a narrow way, or a defeat. Also to make their huts, and all other exercises of warre.

At every dislodging he must cause his company to be put into battalia, and then to cause them to march according as the ground will permit, and at their lodging to lead them in a long order of march, either 3 or 5 in rank.

Marching with his companie alone, he cannot punish a souldier with death, unlesse he rebell, for then he ought to kill him, but for any other matter he can but disarm him, take away his accoutrements of liverie, degrade and cashier him; or commit him to the censure of the Colonell of that regiment.

He must take care for the payment of his souldiers, of their armes, victuall, and munitions, to cause the hurt to be healed, and to compose quarrels. He must make choice of an expert Lieutenant, a courageous Ensigne, two diligent Sergeants,

Sergeants; ſuſpecting Corporals, a faithfull clerk, a carefull harbinger, a bold chirurgeon, and a pious Chaplain.

The Captain appointeth his own Sergeants, harbinger, drum, fyfe, and chirurgeon: but for his Lieutenant, Enſigne, Corporals, and Appointees, he muſt preſent them to his Colonell, and to have his leave to place them in their offices.

The companie entring the guard, the Captain is to march at the head, with a pike in his hand, and compleatly armed. If it be in the field, they are to be ruſſet, but rich ones; if it be in a citie, having a fair plume on his head-piece, which he ſhall cauſe to be carried before him.

He muſt cauſe his ſouldiers to know how to fight ſingle, how in a body.

He muſt know the advantages of places, armes, times and occaſions, and how to make uſe of them.

To underſtand fortifications, the manner of defending and aſſailing of places of ſtrength; how, and in what manner the works are to be made; that ſo when it ſhall come to his turn to direct or guard a work, he ſhew not himſelf a novice or freſh water ſouldier.

Of the drum.

In every companie there muſt be one or two drums, and over them all a drum major.

The dutie of every drum is to beat all manner of beats, as the march, the alarm, the troop, the chamadoes and anſwers thereunto, reveills, and proclamations.

They muſt know how to obſerve what they ſee, to take good notice thereof, and to make true report of it.

The

The drum major must be lodged near the Sergeant major, or in his own lodgings; it being his part to give instructions to the rest, and to observe and take into his custodie the enemies drums which enter the camp.

He may with his staff correct the drums which fail of their duties.

All the drums are to attend him morning and evening to the Sergeant major, to know the orders.

Of the harbinger.

He must have a list of the souldiers of his companie, and make the divisions for the lodgings.

At the muster he giveth a muster roll of the souldiers to the commissarie, controller, or clerk, and keeps account of the payes received and due, also of the armes of the companie belonging to his Captain.

He is to take his quarter from the Quartermaster, then to mark out the Captains lodging, the Lieutenants, Ensignes, Sergeants, his own, the drums and fyfes, and to put the rest into billets or lots, and to cause the Corporalls to draw them by turn, who shall distribute them among the souldiers: this is to be done before the Ensignes lodging. He ought to keep a register of all the lodgings of his quarter.

Of the barber chirurgeon.

In every companie there must be a chirurgeon, to trim the souldiers, to attend them which are sick, to dresse the wounds of such as are hurt (being as an assistant to the chirurgeon of the regiment) having proper remedies to stench the bloud,

bloud, to hinder inflammations, and to asswage the pain.

Of the Provost.

It is the Provosts charge to pursue fugitives, to apprehend delinquents, and to imprison them.

He hath under him a Lieutenant, a clerk, six Marshals, and an executioner. His Lieutenant must be skilled in the lawes; if he be not, he is to procure some graduate in the lawes to assist him.

He sets the prises on all the victuall of his quarter, and no man can sell any unlesse it be taxed by him. He appointeth the butchers shambles, and is to take care that the quarters be kept clean. He maketh out processes, heareth and examineth witnesses, searcheth out the truth, &c. And having fitted the cause for triall, the Colonell, Sergeant major, and Captains judge of it, and passe sentence in the name of the Generall.

Before a souldier be delivered to the executioner to be punished for any infamous delict, he must be publikely disarmed and degraded by the Sergeant major.

In marching, it is his charge to conduct the baggage, and to see it kept in good order.

Of the Quartermaster of a regiment.

The office of the Quartermaster is to quarter the regiment, and to distribute the quarters to the harbingers of each companie.

He must ordinarily be near the Colonell, and must every evening go to the Quartermaster Generall to receive the orders for the divisions and the rendez-vous of the troops, and to give knowledge thereof to his Colonell.

When

When the Marſhall of the field removeth, the Quartermaſter Generall, and all the Quartermaſters of the regiments, with all the harbingers of companies are to accompanie him.

The diſtributions of lodgings being made by the Marſhall of the field, his aſſiſtants, and Quartermaſters Generall, and delivered to the Quartermaſters of regiments, they are preſently to adverтiſe their Colonels of the place, and to conduct them thereunto, either by themſelves or ſome others.

During the time that the Quartermaſter is about viſiting the diſtributions of the lodgings, all the troops are to keep watch round about the place, and to ſend out to diſcover.

Firſt he appointeth the Colonels lodging and the Sergeant majors, then his own, in the middle of the regiment if it may be, then he makes as many quarters as there be enſignes, and the harbingers of every companie chooſe the beſt lodgings for the Captains, Lieutenants, and Enſignes.

The Quartermaſters of regiments muſt cauſe the harbingers to draw the billets for their quarters, every one in his order.

They muſt be informed of the lodgings of the whole Armie, to know to whom to give or from whom to receive ſupplies in caſe of neceſſitie.

If the quarter be in the open field, the Quartermaſter Generall ſhall appoint to each Quartermaſter the place and ground which he ſhall take, and the Quartermaſter ſhall diſpart the ground to the harbingers.

Of the Sergeant major.

His office gives him acceſſe to the Generall of the Armie at all houres, who ſpeaking with him, knows

nows from him when, where, and how his regi-ent ſhall march, whether alone or with others; hether in one battaillon or many, and in what orm.

It is his office to give order how the compa-ies ſhall march, ſo that his place gives him au-horitie and command over all the Captains of his egiment.

He muſt be exceeding well experienced and xerciſed in his office, principally in embattailing is men; and to rally them being routed, and that n ſuch form as he ſhall be commanded.

He muſt know of the Generall whether his egiment ſhall march in the vanguard, battaile, or ear.

He is to know the countrey, whether it be arge or ſtrait, and thereby to judge how he is to arch, and what order to obſerve, that he may ot be diſturbed by the horſe, artillerie, nor bag-age: being ready to march away, he ſhall cauſe he drum major to beat, and he the reſt.

He muſt advertiſe the Captains, cauſe the En-ignes to march out of their quarters, form his bat-aillon, and give to every Captain the place which he ſhall hold for that day.

Having brought his troops into the field, he muſt ſee them march away, and obſerve whether hey march in good order. The Colonell is to ead at the head of the regiment.

Then the Sergeant major is to go to the Ge-nerall, and to keep near him as much as may be during the march, to ſee whether there will be any new order for him to receive.

If there be any difficult paſſage, the Sergeant major ought to be there preſent, to prevent the diſosder

diſorder which might happen in his regimen
and to put them in order again if they were di
ordered. Before the regiment enter their qua
ters, the Sergeant major ought to go and take
view of them, or cauſe them to be viewed; the
at his return to the regiment, to give licence t
the Enſignes to lodge, except thoſe whoſe tur
it is to have the guard, which muſt enter th
corps-du-guard, and place their ſentinels, unti
it come to the turn of others.

Now the regiment is to be lodged either i
the field or under ſhelter. If it lodge in th
field, either the regiment is alone, or accompa
nied with others. If it be alone, the Sergean
major muſt cauſe it to be barricadoed, or re
trenched, or encloſed by waggons or other de
fences of the field.

After that he is to place his corps-du-guard
round about the quarters; and the ſentinels a
ſo near a diſtance that they may hear each othe
ſpeak, being about eighty or an hundred pace
off from the corps-du-guard: they are to be dou
ble, that is, of two men, namely, a musket and a
pike; and 500 paces from them, other ſingle
ſentinels are to be placed, which are called per
dues. In caſe of alarm, the ſentinell-perdue ſhall
retreat to the double ſentinell; and in caſe of ne
ceſſitie altogether (having given fire) are to re
treat to the corps-du-guard.

The Sergeant major muſt often, and at divers
houres of the night, viſit the corps-du-guards.

If there be more regiments, they ſhall fortifie
themſelves with waggons, or entrench them
ſelves, and each regiment ſhall take their quar
ter, and ſhall make their guard as aboveſaid.

If

If an alarm be given in the field, the Sergeant major is to betake himself to the alarm-place of the regiment, and there to form his battaillon, and send men to double the guards on that part where the alarm was given, and to give notice to his Colonell and the Generall of foot (if he be present) of what passeth. The Ensignes must not retreat, unlesse the Generall, or their Colonell, or Sergeant major give them leave.

No Ensigne must remove from his place, nor enter into the same, without leave of the Sergeant major or his assistant. No order ought at any time to be altered but by him, for he giveth not any orders but by appointment of the Generall or Colonell.

All sorts of munitions which are to be distributed amongst the regiment, ought to be delivered to the Sergeant major, who is to divide them amongst the companies. He hath the charge to provide all things necessarie for his regiment, to send away the sick men to hospitals, commanding the Provost to provide waggons.

The Captains are to receive the advises of the Sergeant majors assistant, as from himself; the Quartermasters do usually perform this office.

The Sergeant major ought to take the word from the Generall, or the Marshall of the field, or from his Colonell; In absence of these he giveth it himself.

In the day of battaile he ought not to be on foot amongst the Captains, but must be on horseback, now on the front, then on the rear, to put in order those which might happen to be disordered.

If the regiment lodge under shelter, the Sergeant

geant major is to view the place within and without, the moats, the gates, and the walls, appointing the places for the corps-du-guards and sentinels, and the way of the rounders, that it may be free.

He must choose a place to make the alarm-place for the regiment, and there the companies are to have their rendez-vous, in case of alarm.

After that, he must lead his regiment in order into the alarm-place, placing his guards at the gates, and on the walls; that done, he shall give leave to the Captains to go to their lodgings in their severall quarters in the town, giving them order (under his hand) concerning the place whither they shall resort in case of alarm; which order he may change so often as he shall think good; for the companies ought never to be assured of the place of their station, unlesse it be for the rendez-vous within the town, but not for the quarter on the walls: for the Sergeant major must (at every turn) cause the companies to cast lots, to know what part of the walls will fall to their turns.

He ought to take care to cause the bridges, corps-du-guards and watch-houses to be repaired, if need be, and to have wood, torches, lanterns, and cressiet-lights for the guards.

He is to cause the companies to enter the guards about ten or eleven a clock in the morning. He is to open and shut the town gates at the rising and setting of the sunne; and to place the watches for the walles presently upon shutting the gates, and to releeve them at the opening of them.

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The Serg ants which have the guard muſt be preſent at the opening and ſhutting of the gates, and carrie the keyes of the gates to the Sergeant major, and he to the Governour; but it is better that the Sergeant major be there aſſiſting, and be preſent at the placing of the guards, ſo often as may be.

He muſt have a liſt of all the ſouldiers of every companie as they paſſed at the muſter, ſigned by the Commiſſarie or Treaſurer which took the muſter; and in caſe he finde not ſo many ſouldiers at his guard, the officers of the companies are to give him an account thereof, becauſe it belongeth to him to give account to the Generall concerning his regiment.

Of the Sergeant major Generall.

The Sergeant major Generall receiveth from the Generall a plat of the form which he will give to his Armie, the diſpoſition and placing of the members of it, Cavallrie, Infanterie, Artillerie; the order which they ſhould obſerve in fight, with commiſſion ſigned by the Generall to diſpoſe it in that manner.

To this commiſſion the whole Armie muſt yeeld obedience, and the Sergeant major Generall with the Marſhals of the field ſhall diſpoſe thereof, according to the form and place which the Generall ſhall have preſcribed.

Of the Quartermaſter Generall.

He hath the ſame charge of the whole Army, which the Quartermaſter of a regiment hath of his regiment.

Of the Colonell.

The Colonell ought to be a man of authority

and reſpect, to have abſolute command over his Captains, from which he muſt procure love and reverence, which he is to gain by his valour and modeſtie.

The regiments being together, muſt march according as the King hath given them preheminence, and in that place which the Generall ſhall appoint them, in the van, battaile, or rear.

His principall charge is to lead his regiment to the combat, on the head thereof.

He ought to viſit his troops, cauſe his guards to be well ordered, changed, and releeved, and to ſee that each officer do his duty, and that the works be well ordered.

He ought to ſee how his Companies be furniſhed, what armes they have, and what exerciſes they perform, and to command the officers what they ought to do.

In the armie the Colonell cannot give leave to a ſouldier to depart from his regiment, but to change his Companie; the firſt appertaining onely to the Generall.

The Colonell ought to be called to councell by the Generall, when matters are to be agitated which belong to his charge; where he ſhall heare the opinion of others, and freely ſpeak his own. And if it be about a matter of importance, and that he knoweth his opinion to be good, though the contrarie opinions (being ſtronger in number) do carrie it, he ought to commit his opinion to writing, to purge himſelf before his Soveraigne, in caſe the execution of the councell prove ill. Mean time he muſt give way to the pluralitie of voices, and entirely obey his Generall, and appear in all

place

places where he ſhall be commanded, making it appear that the contrarie opinion which he held at the councell was not for want either of courage, or of good affection.

The Colonell muſt render all manner of obedience to the Generall of the armie, and to the Generall of Infanterie, (for they have power to command him) and to the Marſhall of the field, as having the charge from the Generall to give the orders, the quarter, the alarm-place, the field for the battaile; to cauſe the forces to march, lodge, diſlodge, enter into guard, convoy, &c.

The aſſiſtants to the Marſhall of the field, or the Sergeant major Generall cannot command him any thing as of themſelves, but by order ſigned by the Generall, or the Marſhall of the field for the armie, with the plats and deſignes of the ground of the ſtations and places for combat, giving command by vertue thereof.

Of the Marſhall of the field.

He ought to be valorous, judicious, and expert, to remedy many caſuall accidents.

He ought to come firſt to the rendez-vous of the armie, to receive his troops there, to diſpoſe of the diſparting of the lodgings, as well for the Cavallrie and Infanterie, as for the Artillerie, victuall, and pioners.

He is to inform the Generall of the whole eſtate of the field, and then the Generall will give him the order and diſpoſition of his armie, whereof he is to give notice to all the commanders of horſe and foot, ſending them the direction.

He is to ſet down the order of the guards of the field, and of the convoyes, and to cauſe the

laws and ordinances to be publiſhed and obſerved.

He is to view the paſſages by which the Armie is to march, to know what order they muſt obſerve. To do this, he is to take three or foure troops of light horſemen, of ſuch as are to have the guard the night following, which are warned over night to be in readineſſe againſt the morning following, and to be at the rendez-vous which ſhall be appointed them, rangeing themſelves under the cornet of the ſaid Marſhall of the field with the Quartermaſters, Commiſſaries of the victuall and artillerie, engineers, harbingers, and pioners.

In marching he is to ſend a troop before, and one on either hand, who ſhall ſend out before them five or ſix ſcouts to diſcover the champain, as perdues.

If an alarm happen, he ought to be well informed of the cauſe, and not to miſtake it; ſo ought he not to ſtay ſo long that he be put to flight, but ſhall ſend word to the Generall for ſupplies, that ſo the Armie may have leiſure to embattaile.

If he arrive ſafely at the rendez-vous of the Armie, he is to ſend his troops half a mile or more beyond, to diſcover the countrey, and to get intelligence concerning the enemie; mean while he is to obſerve the ground and place for the camp, and having traced it out in the generall, the Quartermaſter Generall ſhall make the diviſions, and deliver them to the Quartermaſters of regiments.

Finally the Marſhals of the field ought to order the quartering of the whole Armie; to be the

the first on horseback, and to alight last, being alwayes present at all the motions of the Armie.

He must take the word from the Lieutenant Generall of the Armie, to give it to all the officers of the field, which must come to him for it.

The Generall and Lieutenant Generall of horse, the Generall of foot, and the Generall of the Artillerie take the word from the Generall of the Armie, if they will not take it from the Marshall of the field.

Of the Commissarie Generall of the victuall.

The Commissarie Generall of the victuall ought to know the number of men which are to be fed, the place whither the munitions are to be brought, when they must begin to be distributed, and how long to continue, that so he may make provision of corn, and cause the bread to be baked.

The measure of wheat at Paris is this, the muyd hath twelve septiers, the septier twelve boysseaux. The septier of wheat weigheth about 240 pound, and of meslin 220 pound. *what these make of our English measures, see it in Cotgrave, and others.*

The munition meslin is two third parts of wheat, and one third part of rye: the boysseaux of this meslin weigheth about eighteen pound. There is drawn out of it three pound of bran, and fifteen pound of meal, which is kneaded with ten pound of water, whereof the paste weigheth 25 pound, of 16 ounces in the pound, and makes about 20 pound of baked bread.

To every souldier is usually given two loaves a day of ten ounces weight a piece, and one pinte of wine Paris measure, such as there is 290 in a

muyd, and three muyds make a tun.

The Cavallrie is not fed with amunition-bread, becauſe they are uſually quartered under ſhelter in towns and villages. The waggons to carrie munition-bread are made after the manner of tumbrels or cheſts, each of them is drawn by foure horſes, and carrieth 1500 loaves, and a mule with wicker paniers carrieth 300.

There muſt be three times as much carriage as is needfull to carrie victuall for one day; as to feed five thouſand mouths, there muſt be ten thouſand loaves, and five and thirty mules or horſes to carrie them; being tripled they will be one hundred & five mules, which muſt be had namely, one third part to go to fetch the bread one third part which is coming with it, and one third part which is unlading. There uſeth ordinarily to be added to the munitions one quarter of bread and wine more then needeth.

Of the Maſter or Generall of the Artillerie.

He is abſolute over all the Artillerie and the officers thereof, and is ſubject to none but the King, and in the armie to the Lieutenant Generall.

He muſt keep account or inventorie of the pieces, powder, bullets, and equipage of the pieces, and of all the officers of the Artillerie in the whole kingdome, to inform his Majeſtie when he ſhall have a deſire to execute ſome deſigne, as to beſiege ſome place, to fight a battaile in the field, or at ſea, or to ſtrengthen his holds.

He ought to know what proviſions and preparation

parations he is to make, how and where the ordinance are to be planted, at what diſtance they ſhould be levelled, of what qualitie the wall is which is to be battered, and what the power is of his Artillerie.

If a ſouldier of the armie hath committed any offence, and can convey himſelf among the Artillerie, he is there as in a priviledged place, and cannot there be apprehended, unleſſe it be by the Provoſt of the Artillerie, who ſhall deliver him into the hands of his Captain, after that he be informed of his delict by a legall triall.

In the ſituation of the ordinance he is to regard that the place be commodious, that it be eaſie to be defended by the ſouldiers, that they may skirmiſh with facilitie, that in caſe of neceſſitie the ordinance may ſpeedily retreat, that they may diſcover, command, and batter point blank, and that their diſtance be not exceſſive.

The ſouldiers appointed to guard the Artillerie, ought not to come nearer it then fifty paces.

The Generall of the Artillerie ought every yeare to preſent a liſt of the officers of the Artillerie to the King, filling the vacant places with the names of ſuch perſons as he ſhall think moſt fitting; then the King either confirmeth the ſame, or altereth it at his pleaſure, then ſigneth it, and cauſeth it alſo to be ſigned by a ſecretarie of ſtate. This liſt is delivered to the treaſurer Generall of the Artillerie, who proſecutes the aſſignations, and payeth the officers named in that liſt, taking their acquittances.

His officers are, a Lieutenant Generall, a

Guard Generall, two Controllers Generall, a Treaſurer Generall (who payeth according to the Generall of the Artillerie his order) a Quartermaſter, a Provoſt; and each of them hath two Commiſſaries in all the ſtorehouſes and armories of France.

He cauſeth the ordinance to be founded, tryed, and mounted, he buyeth the metall, wood, bullets, iron work, pikes, muskets, and all ſorts of armes, ſhovels, pickaxes, hatchets, hammers, ladders, &c. horſes, waggons, cordage, &c. cauſeth the powders and fireworks to be compounded, and that in all the magazines of France.

Of the Generall of horſe.

He commandeth all the light horſe and carabines, and in his abſence the Colonell doth it.

He lodgeth and leads them, and ſends them to the conflict, and gives them the order of combat.

He is lodged with his Cavallrie at the head of the Armie, ſends out every day to diſcover the enemie, renders an account dayly of the ſame and their actions to the Lieutenant Generall of the Armie.

The chiefs of the forces are the King, the Kings ſonnes, the Princes of the bloud, the Generall, and the Colonells, &c.

For all the troops there is a Quartermaſter, and one or two harbingers Generall.

And over every troop, a Captain, a Lieutenant, a Cornet, a Quartermaſter, an harbinger, and a trumpet.

The dutie of the troops is, alwayes to ſcoure and diſcover the high-wayes and advenues by which the enemie might come, and to be ever hovering

hovering about the enemies Armie; for this cauſe they are to make great and long dayes-journeys, but are excuſed of watch in the night, except in their own quarters, and for them onely.

At the ſiege of towns they are ſent before to make waſte, to ſeize on the paſſages, to inveſt the towns, to skirmiſh, and to take priſoners, thereby to be informed of the eſtate of the town.

It is no diſgrace for the light horſe to retreat on the gallop, for their dutie is to fight as well retreating as advancing, ten againſt fifty, thirty againſt an hundred; therefore they muſt be well practiſed to make a good retreat, and to ſingle themſelves out of a greater troop then their own, and to charge them again in opportune time, according as their courage and judgement ſhall give them reſolution, and experience ſhall direct them.

Of cuiraſsiers.

The Conſtable or Generall of the armie commandeth the cuiraſſiers, and in his abſence the Lieutenant Generall of the armie.

They are divided into troops of an hundred men, at leaſt thoſe which belong to the King, the Princes, the Conſtables and Marſhals of France; the reſt are not ſo ſtrong.

The officers of every troop are a Captaine, a Lieutenant, (in the Princes troops there be Sub-lieutenants) a Cornet (which is ſquare for the cuiraſſiers) or a Guidon (which is long and ſplit for the harquebuſiers) a Quartermaſter, a harbinger, and a trumpet.

They may fitly march, lodge, or fight in the van,

van, battaile, or rear, according to the order preſcribed by the Conſtable or Generall of the armie.

The Captains chooſe and diſpoſe of places amongſt all their members at their pleaſure, but they cannot caſhier any unleſſe he hath been wanting in the Kings ſervice.

Their dutie is to keep cloſe united, to march ſoft and fair, and never to turn their backs, and for this reaſon they muſt be heavie armed.

Of the Generall of Infanterie.

The charge of the Generall of the Infanterie extendeth it ſelf over all the foot, much more abſolutely then the Colonels of his regiment.

In all the regiments he maketh the Sergeant Majors, Provoſts, Quartermaſters, Chirurgeons, and Almoners.

All adminiſtrations of juſtice over all the foot, paſſe in his name.

He hath the nomination and preſenting of the Captains to the King, he is alſo to give him information of the ſufficiencie or inſufficiencie of the Colonels, ſeeing that the King beſtoweth their offices upon them, that ſo he may know all thoſe of his kingdome which are capable, as having learned their profeſſion amongſt the foot.

Of the Conſtable or Generall of the Armie.

He hath the command of the whole armie.

He ought to know all the duties and charges of the officers thereof, and ſhould be of great experience,

experience, that ſo amongſt many differing opinions, which are uſually in councels, he may be able to chooſe the beſt.

He ought to be of great authoritie in his commands, of great courage in combats, conſtant and reſolute in croſſe accidents, ſucceſſefull in his enterpriſes; and that he may be ſuch, he ought to invoke God to be propitious to him, who will give him judgement to diſpoſe his armie after the beſt manner, and (by his good diſcipline, diſpoſition, and order) to render it not onely able to overcome (which is all that a Generall can do) but will alſo make it victorious, if it depend on the power and favour of the Lord of hoſts.

Good ſucceſſes or bad ſhould not make him change countenance, but to receive both modeſtly, without diſcovering the paſſions of his ſoul by his countenance.

Impatience, ſluggiſhneſſe, choler, crueltie, or envie towards thoſe which acquire glorie under him, ſhould not be harboured in his ſoul.

He muſt be reſolute, and well weigh the occaſion of giving battaile, rather then hazard all his troops in fight; labouring to overcome his enemie as much by induſtrie as by force: as, in ſurpriſing him being diſordered, his troops being ſcattered, wearie, wet, or ſurpriſed with hunger, thirſt, cold, or ſome other accident.

He is not to ſuffer skirmiſhes, unleſſe he ſee much advantage; for by overcoming in theſe ſmall occaſions, the ſouldier becomes more courageous, aſſures himſelf of the good fortune and

good

good leading of his commanders, and easily perswades himself of the victorie.

He ought to consult with many, but never to tell his resolution to any man, or at least to very few: by this means he shall render himself so practised as he shall be able wisely to lay hold on fit opportunities and the instant of occasions, to prevail thereby.

He ought to acquire the love of all men, principally of the commanders, and not to wearie or tire his army too much, for fear of diseases, yet to cause his battaillons to be throughly exercised in all exercises of warre. He ought to be rigorous towards evil men, and to cause justice to be readily executed.

Of fireworks.

CHAP. XV.

IN the tenth chapter hath been shewed what materials were to be provided for fireworks; here shall be taught how they are to be compounded.

To make garlands or pitcht ropes for cressets.

Take of black pitch twelve pound, of tallow six pound, linseed oyle six pound, hard resin six pound, turpentine six pound, melt these altogether, and lay match therein, untill it suck up all the composition and be well incorporated; then make your garlands therewith.

To

To make torches againſt rain and winde.

Take cords of fine hemp, very open twiſted, about the thickneſſe of ones little finger, beat them with a mallet till they be very ſoft; diſſolve ſaltpeter, and boil the ſaid cords therein, then let them be dried. Make a paſte of ſulphure and gunpowder beaten together, ſoaked in linſeed oyle untill it be liquid; ſteep your cords in this liquour, and let them drie again. Then take three parts of wax, two of reſin, one of ſulphure, one of black pitch, half of turpentine, a quarter of campher; melt and mix all that well together, then cover your cords after the manner of a wax candle, and joyn foure of them together, and in the middle of them a ſtaff of ſallow about the thickneſſe of a finger, prepared as the cords or matches above ſaid.

To diſſolve ſaltpeter.

Put to one pound of ſaltpeter two ounces of water, then ſet it a melting over the fire in a kettle. It will alſo diſſolve alone, but not ſo eaſily.

To bring ſaltpeter to flower.

Diſſolve the ſaltpeter over the fire, then ſtirre it with a ſtick untill it come to be like meal.

To make roch petre.

You muſt melt it alone in a kettle, then let it grow cold.

To make flowers of ſulphure.

Melt ſulphure in a limbeck, and the flowers will gather together about the helm.

To better the flowers of ſulphure, melt them and lay them into ſtrong vineger.

To make an excellent ſulphure, take one part of flowers of ſulphure, melt it: put into it half a part of quickſilver, and ſtirre it ſoftly over a ſmall fire, untill all be mixed, then ſlake it with ſtrong vineger.

To make excellent coal.

Take young twigs of haſle or ſallow, or the ſtock of a vine. put them in ſmall pieces into an earthen pot cloſe covered, then ſet the pot on the fire untill the twigs be burnt; their coal is very good.

To make good powder for muskets and piſtols.

Take ſeven parts of ſaltpeter, one part of ſulphure, and one part and a quarter of charcoal; or rather eight parts of ſaltpeter, one part of ſulphure, and one part and one fift part of coal: beat it altogether very throughly, and ſprinkle it over with good vineger, then grain it.

To make roch fire.

Take one part of common ſulphure, melt it in an earthen pot, being melted put into it half a part of courſe grained powder well dried, ſaltpeter one third part, beaten charcoal half a part; put theſe things together by little and little, being well mingled, poure them on the flore, and you have the roch fire.

To make burning bruſh-faggots to caſt into the moat, to ſhew light in the night.

Take roch fire and melt it, then anoint the faggots with it, or joyners chips, or elſe anoint them with turpentine.

To

To make fireballs to ſet places on fire.

Take roch fire one part, ſaltpeter one part, campher one eighth part, fine powder one eighth part, beat each of them ſeverally, then mix them together with your hand, and put them into an hollow ball, having holes in divers places, with hards amongſt it.

Otherwiſe.

Take one part of campher, one part of ſaltpeter, half a part of ſulphure, one third part of coal, all beaten to very fine powder, then mixed with petroll untill the matter be ſet in clods, then ſet it a drying; the older it be the better it is: then you muſt load the hollow balls, having holes of ſufficient bigneſſe, and give fire to them by a match or week.

To make the match or week

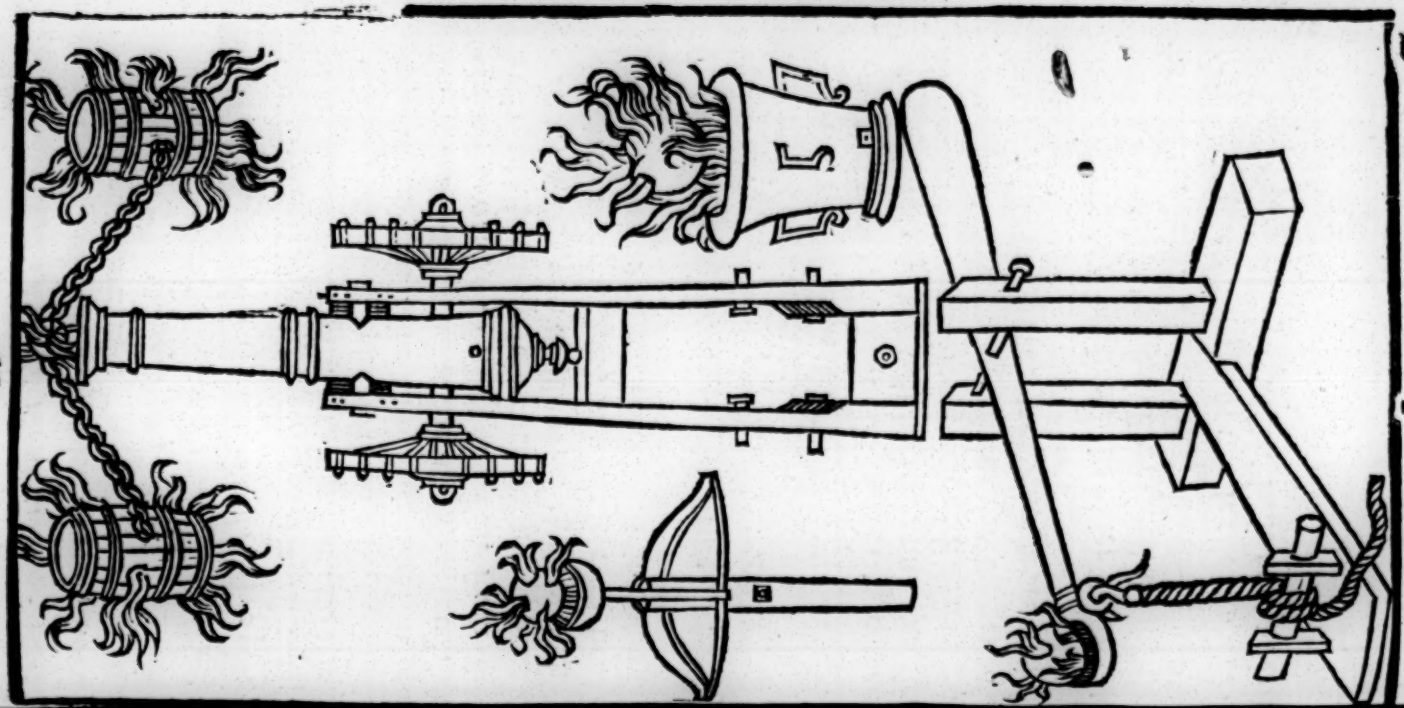
Take half a quarter of powder, a quarter of ſaltpeter, two ounces of *aqua vitæ*, half a ſeptier of vineger, and one pinte of urin, let all this be melted together; being diſſolved, put into it courſe-ſpun-cotten, untill it have ſucked it all up being warm, and you ſhall have a violent week. Take it out while it is moiſt, and by pieces of two, three, or foure foot long, rowl it with your hand on a table ſtrewed with well beaten powder, and being ſo powdred, hang them in the ſhadow to drie, then lock them up in ſome drie place.

To make a fire trunk.

Take a piece of light wood of three foot and an half, or foure foot long, bore it through from the one end to the other with a hole of an inch in diameter, make the wood very ſmooth within and without, which muſt be an inch thick and of a like bigneſſe every where; place at the one end an half pike, which may enter half a foot in at the hole, and nail it ſure; whip the trunk with ſtrong packthred, then anoint and knuckle it with reſin and wax melted together, to keep it from water. The mixture of the powders are twelve parts of ſaltpeter, ſix of ſulphure, ſix of cannon powder, ſix of fine powder, two of glaſſ meanly beaten, two of quickſilver, and of ſal armoniack; beat all theſe ſeverally, then mix them together, and make a paſte of them with oyle of peter, more hard then ſoft, then take hards and make little balls with the mixture above ſaid, of the bigneſſe of the caliver of the trunk, and let them drie, and binde them with ſmall wyer. To charge the trunk, put a charge of beaten powder in the bottome of the trunk without ramming of it, put a ball upon that, and then a little of your mixture, continue thus untill it be filled augmenting the charges of powder, ſo that the laſt be of two charges. You are to give fire to this trunk by the mouth of it with a match of week.

Diver

Divers inſtruments to caſt fireworks.



155

To make rockets.

All the parts following muſt be underſtood in weight and in meaſure.

The matter of rockets.

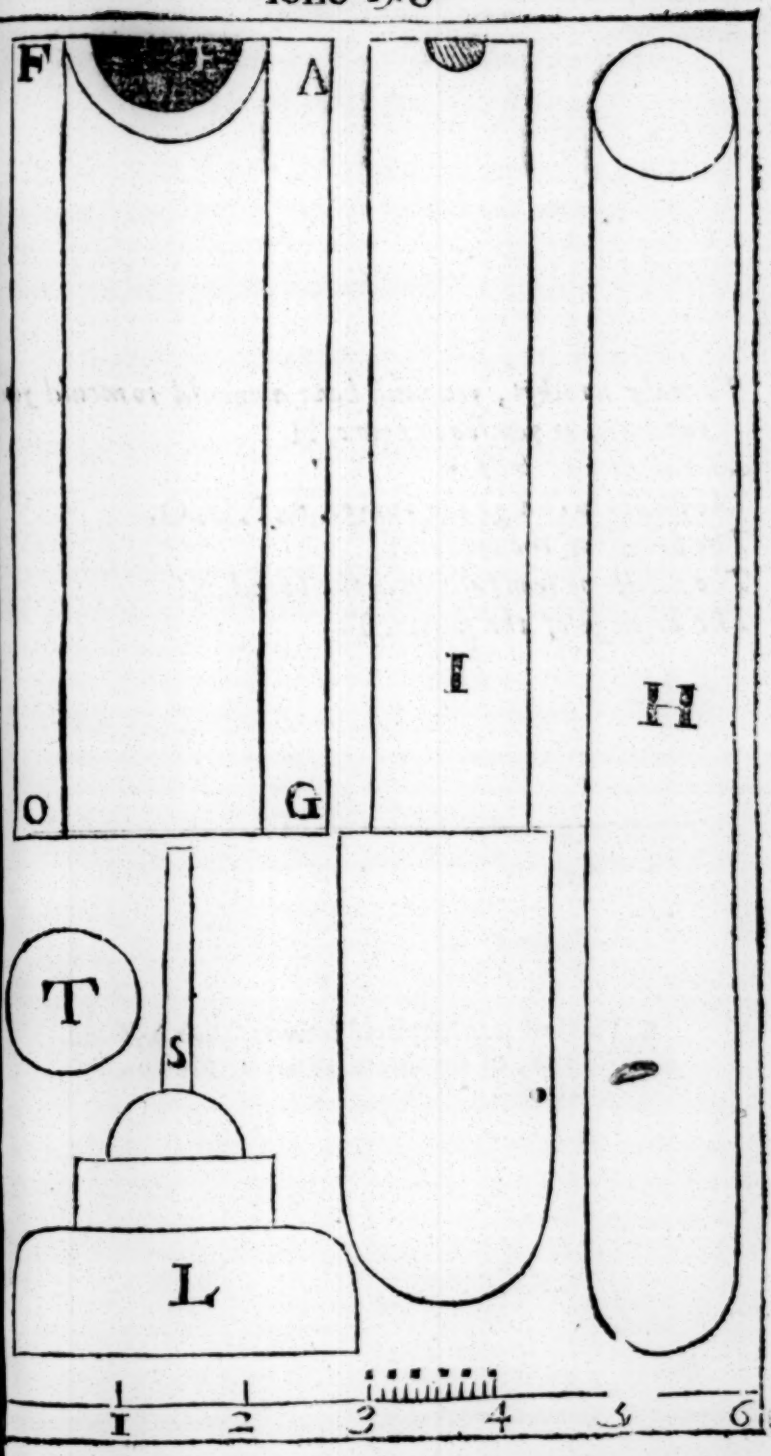
Take a part of beaten ſulphure, one part and a half of aſhes of ivie or vinetree, twelve parts o common gun-powder, well beaten and ſifted; pu theſe three ſorts of powders together into a baſo or other veſſell, and mingle them with both hand till they be well mixed together; and in doin ſo, you ſhall beſprinkle them with a bruſh wit common water, to keep the duſt from flyin away, and that the powders may concorporate to gether, when you ſhall preſſe them within th concave of the rocket, you muſt take heed o powring on too much water, leſt it come to paſte.

The concave cilinder of the rocket muſt b made of ſtrong royall paper, which muſt be rolle and mouled on a moul.

I will not here ſpeak of the manipulation, lea ving that to the makers of them, as being commo and vulgar, onely I will ſay that you cannot bea the matter for rockets too much with an iron ham mer into the cilinders, and that the longeſt oſie ſwitch is the beſt, ſo as it weigh not more then th rocket.

Theſe ſorts of rockets, the older they be, th better: and if they be well whipped about, the will never burſt. The courſeſt powder is beſt, be cauſe it is the eaſier beaten, or elſe take the duſt o powder, that is, that which hath not yet bee grained.

T


F
A
O
G
I
H
T
S
L
1
2
3
4
5
6

To make a rocket, you must have a mould to mould your paper on, as you see in figure. H.
A rammer or drist. I.
The mould to charge the rocket. A, F, G, O.
The breech of the rocket L.
The needle of iron fastned in the breech. S.
The bigness of the starres. T.

¶ This leaf is to be placed betwixt *folio*'s 156 and 157, in the Art of Warre or Militarie discourses.

To make cornet-rockets, which draw fire after them untill they burſt.

Take a part of beaten ſulphure, a part of aſhes of ivie or vine, half a part of oſier coals beaten, and twelve parts of gun-powder beaten and ſifted, and mix it as hath been ſaid before.

To make the compoſition of ſerpents which are added to rockets.

Take aſhes of vine one part, and of gun-powder beaten and ſifted twelve parts, and load the concaves of the quills therewith; and if you would have the ſerpents to crack, you muſt make them of paper as the rockets, and they muſt have a petard of grained powder at one end.

To make the compoſition to charge ſtarres.

Take one part of beaten ſulphure, one part of powder, two parts of ſaltpeter, and half a part of coal of oſiers; all being well beaten.

Of this compoſition take the bigneſſe of a muſket bullet, cover it with hards, and tie it about with thred.

You muſt pierce through theſe ſtarres with an iron bodkin of ſufficient bigneſſe to thred them, as a ſtring of beads or a ſtring of match to give fire to them.

Of the militia of the Grecians.

Chap. XVI.

THeir foot were divided into two kinds, pikes, and ſuch as uſed flying weapons.

The pikes bore a target, or a corſlet and greves, a pike from 20 to 24 foot long, and a ſword.

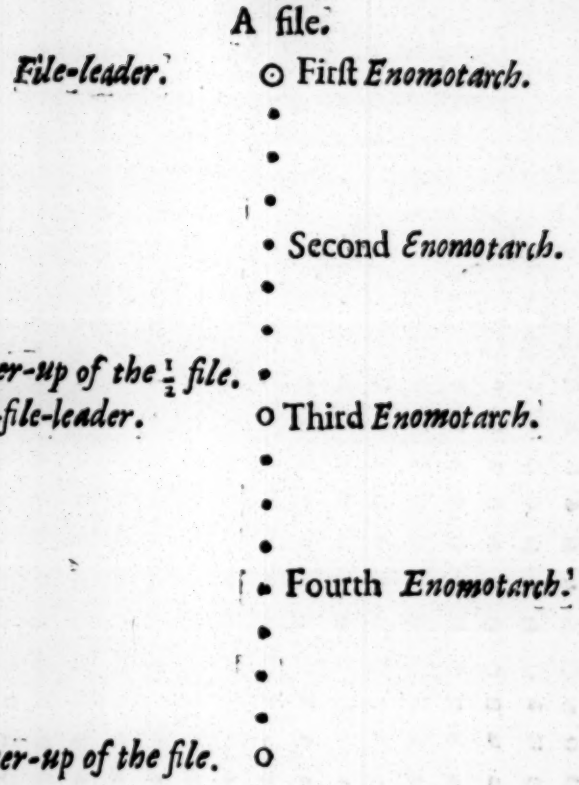
The ſtrongeſt of them covered themſelves with a Macedonian target of braſſe, being foure foot in diameter.

All the pikes were called heavie armed.

They which uſed flying weapons (which were called the light armed) carried wicker targets, bows, darts, and ſlings.

The heavie armed ſouldiers were thus diſpoſed of, 16 men made a file: the firſt man being the file-leader, commanded the whole file; the eighth man was the bringer-up of the front-half-file; the ninth man was the half-file-leader, and the ſixteenth man was the bringer-up of the file.

The whole file was divided into foure equall parts, the firſt ſouldier of every fourth part was called *Enomotarcha*, and had command over the other three.

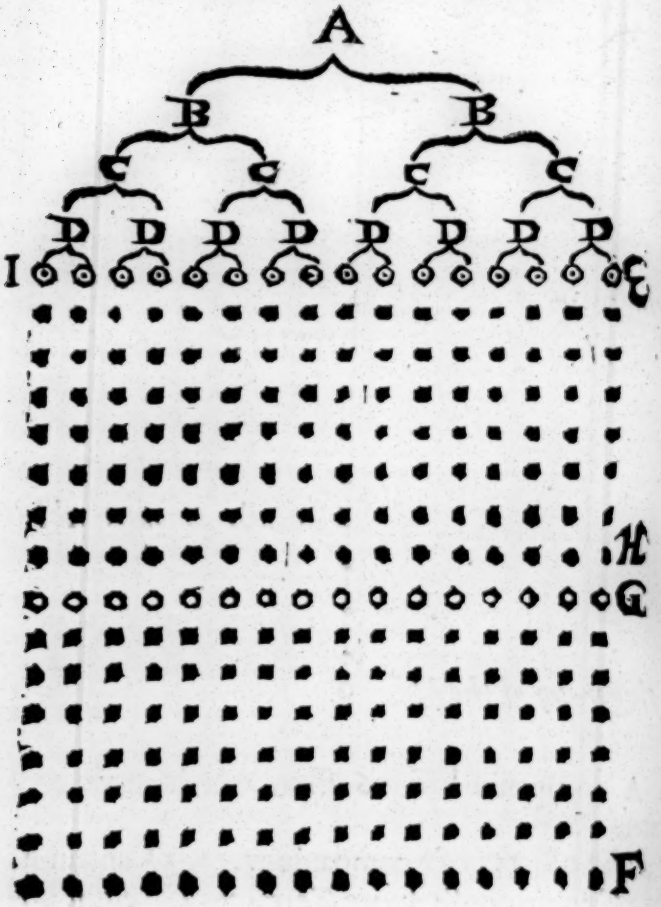


A companie had 16 files, which made 256 men.

The officers of a companie were, a Captain A. two Centurions B. foure Tetrarchs C. eight Dilochites D. 16 file-leaders I, E. 16 bringers-up of the front-half-files H. 16 half-file-leaders G, and 16 bringers-up of the files F.

Besides these they had an Ensigne, a Sergeant, a Trumpet, a Rear-commander, and a Cryer.

The figure of a companie.



The dutie of the officers was to instruct their ſouldiers in all the militarie motions; theſe motions were, to ſtand right in ranks and files, to face to the right, left, and rear; to double files and ranks; to perform their countermarches and wheelings.

To

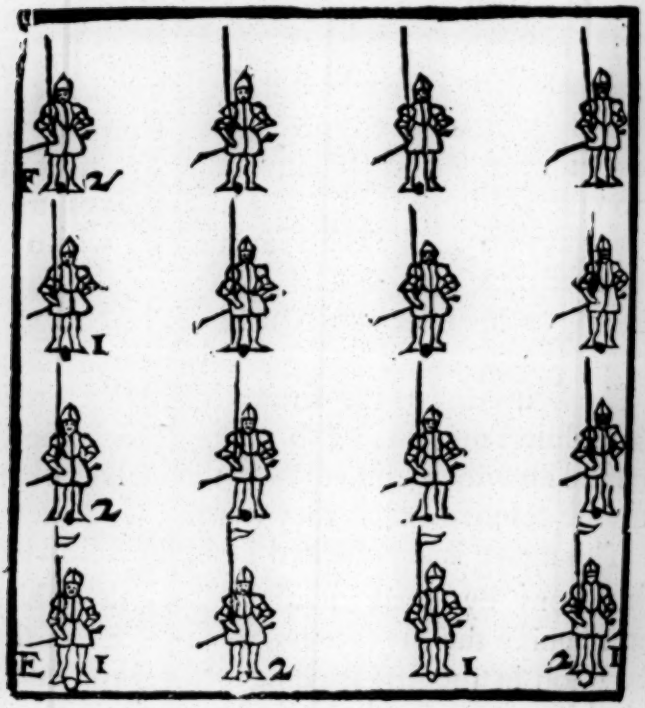
To render this more intelligible, I will deſcribe each of them apart. Firſt, the companie is drawn up into a body (as hath been ſhewed before) then the ranks and files are made ſtraight and even, and they take their diſtances; E. F. is the firſt file, E. I. is the firſt rank.

There be three kindes of diſtances, one for exerciſe, which is for every ſouldier foure cubits of ground (which is ſix foot.) The ſecond, to be ready for battaile expecting an enemie, which is two cubits (three foot) that ſo the pikes may face every way. The third for combat, which is one cubit, that being ſo ſerried they may the more ſtrongly charge the enemie, or ſuſtain his charge.

The figure following ſheweth in what order the ſouldiers ought to be to perform their motions, and how they are to reduce themſelves when they are commanded as they were.

This figure is repreſented in all the following battaillons by theſe marks ○, •, the white ones ſignifie the file-leaders, or the front of the battaillon in the firſt ſtanding before the command given, and the black ones the ordinarie ſouldiers. The ſmall pricks ſhew the way by which every ſouldier moved, the figures of men ſhew in what form the battaillon ſtandeth after the motion according to the command given them, and the cypher figures placed in the ranks and files ſhew which are to ſtand and which to move, or which are leaders, and which are followers.

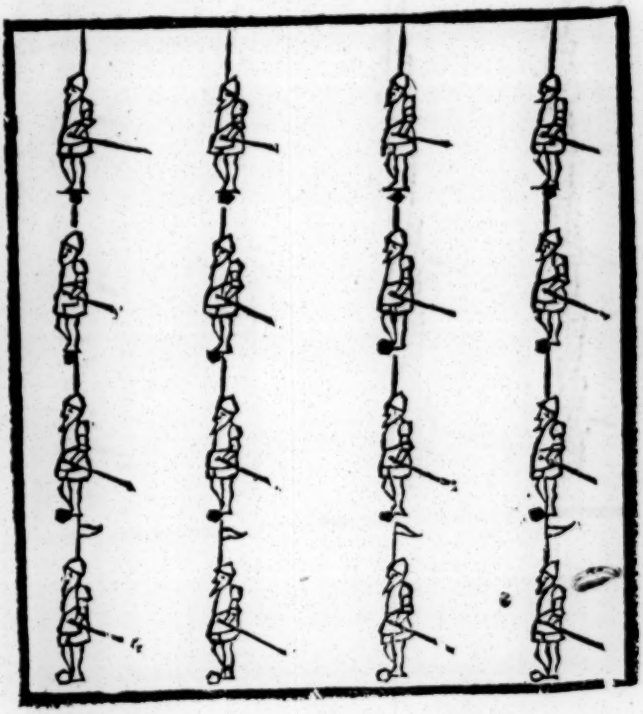
The ſtanding of ſouldiers which have made even their ranks and files, attending the word of command to perform the exerciſe.



To

To cauſe all the battaillon to face to the right, every ſouldier muſt turn his face to the place where his right hand was.

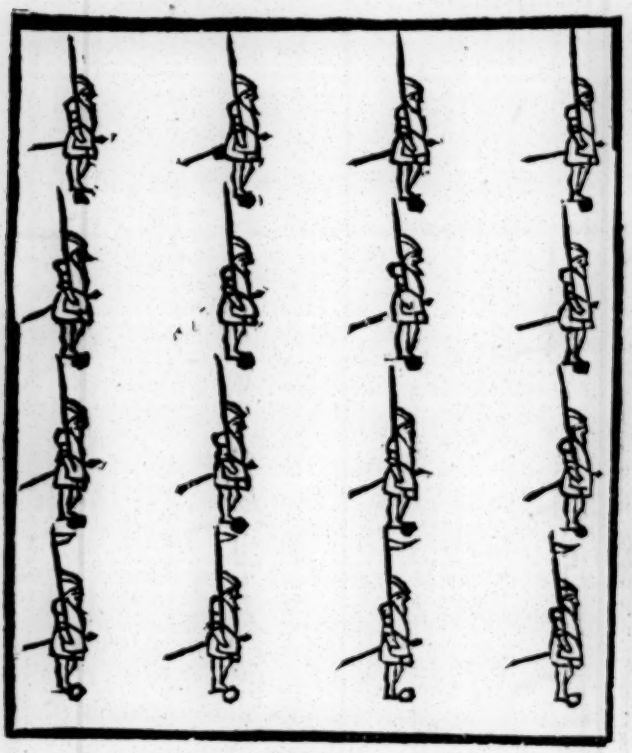
A battaillon faced to the right hand.



To

To cauſe all the battaillon to face to the left, every ſouldier muſt turn his face to the place where his left hand was,

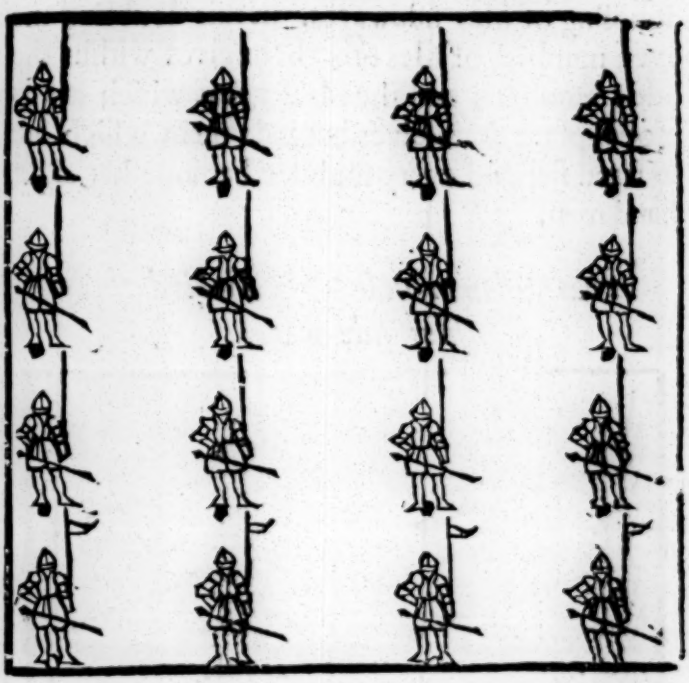
A battaillon faced to the left hand.



To

To cauſe the battaillon to face to the rear, every ſouldier muſt turn his face by the right hand untill it be where his back was.

A battaillon faced to the rear.

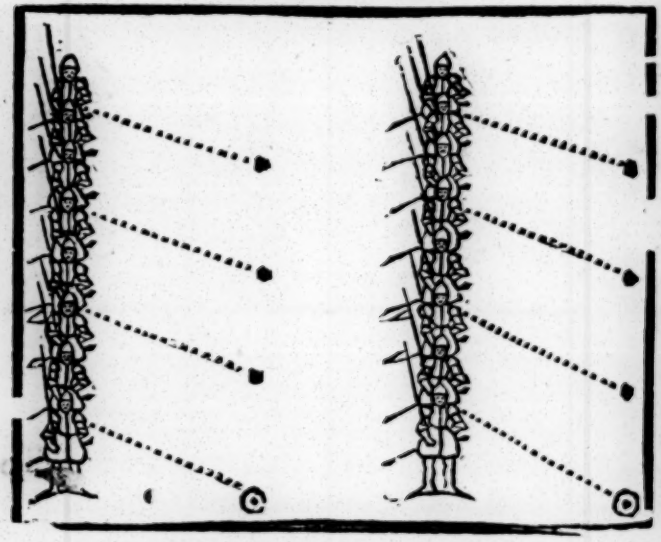


To

To double files or ranks, is to put two into one. Doubling of files is called doubling the flanks, or doubling the depth; doubling of ranks is called doubling the front.

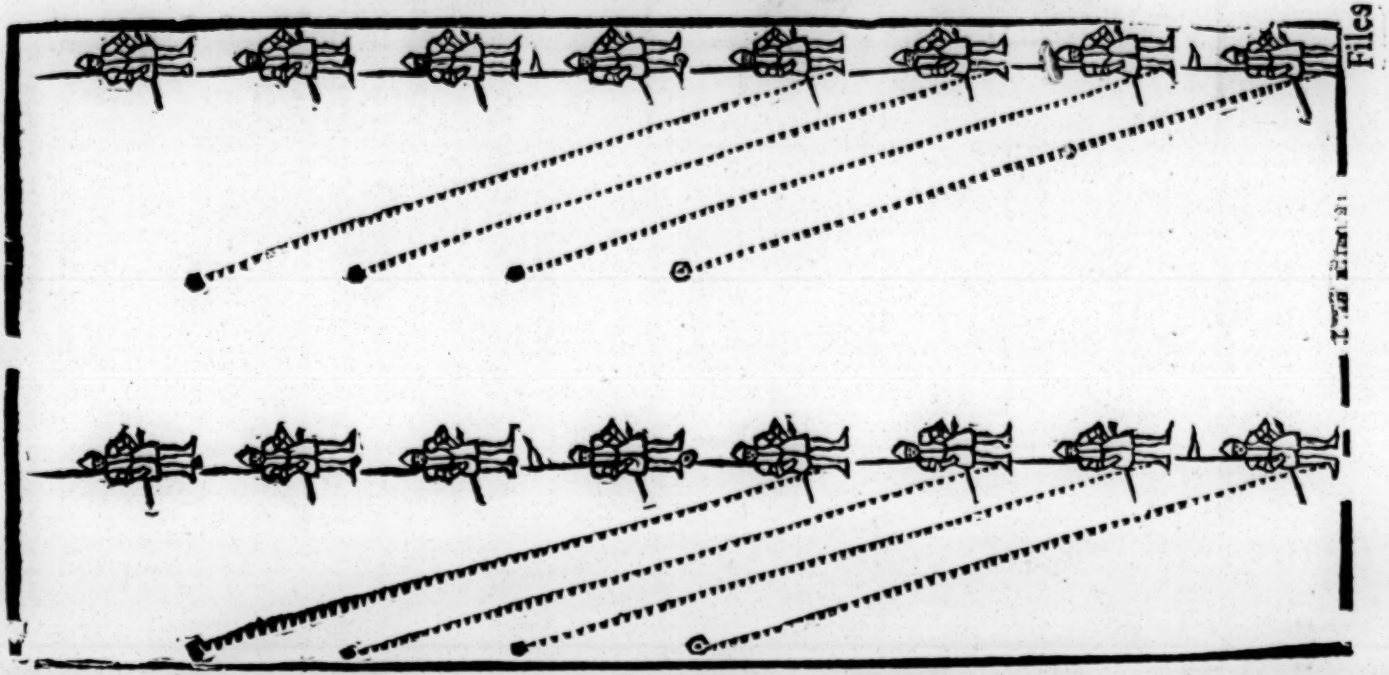
Files are doubled after three wayes, either in inplacing the one within the other, which is called doubling of files sidewayes. In this doubling the even numbers of files mix themselves within the odde numbers, and the file-leaders which are to move, place themselves behinde them which are to stand fast, and every souldier behinde his right hand man.

A battaillon which hath doubled their files side-wayes.



Files are also doubled when one is placed before the other, which is called doubling of files advancing, when the odde numbers place themselves before the even numbers, as the following figure sheweth.

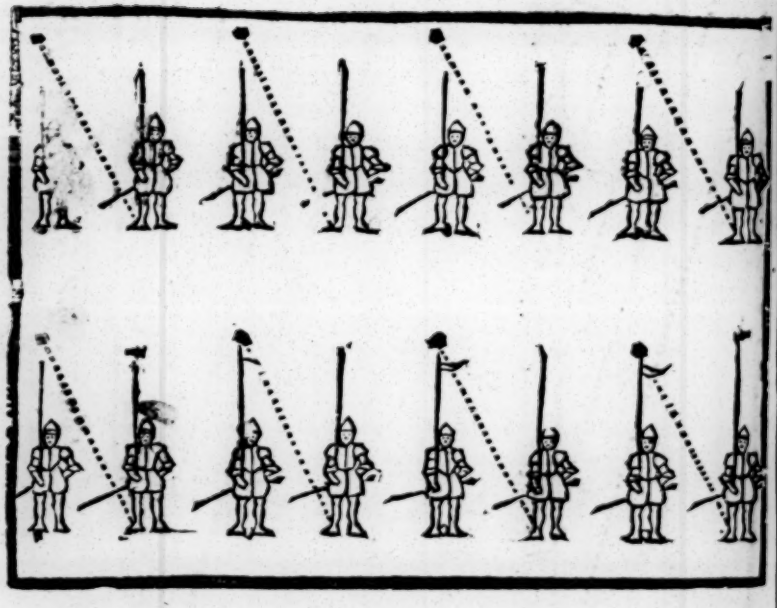
A battaillon which hath doubled files advancing.



Files are alſo doubled, when the left flank, or half ranks, of the battaillon ſtands faſt; and the right flank advanceth untill it be before the other, then cauſing it to face to the left, and to march untill they ſtand right before them, then to reduce their facing.

Ranks are alſo doubled by three wayes, either by mixing them one within the other, which is called doubling by ranks, and here the even numbers of ranks place themſelves within the odde numbers.

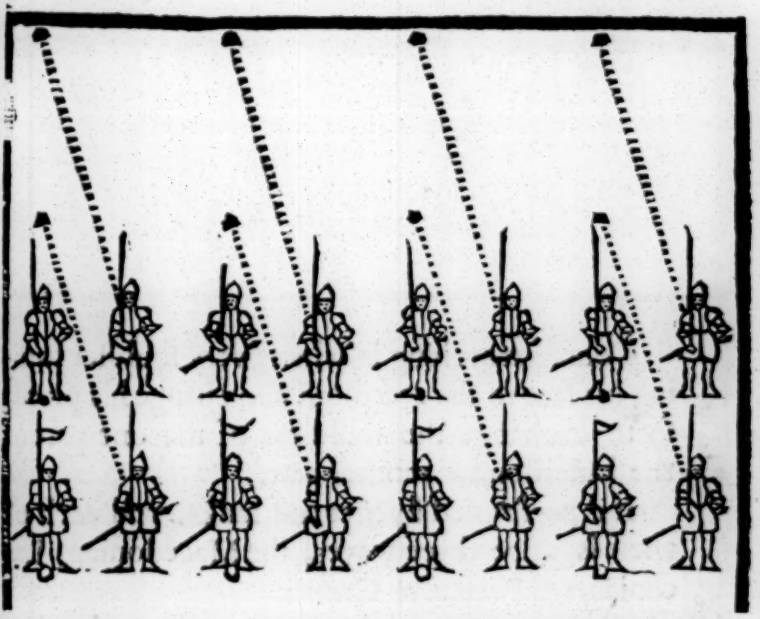
A battaillon which hath doubled ranks by ranks.



Ranks

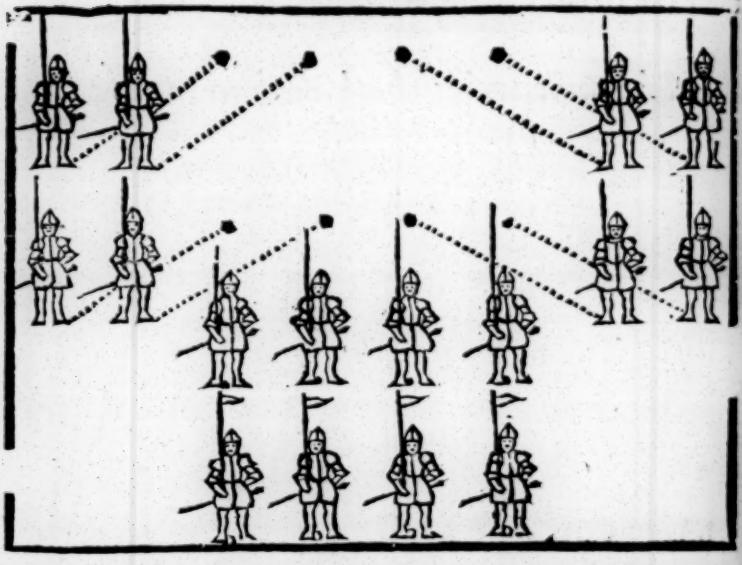
Ranks are alſo doubled, by cauſing the half files to advance, untill the half-file-leaders come up to the front of the battaillon.

A battaillon which hath doubled ranks by the half files.



Ranks are alſo doubled, when the battaillon divides it ſelf at the half files, or rear diviſion. The rear diviſion again divideth it ſelf into two equall parts at their half ranks, the one part to the right, the other to the left, and each of theſe parts advanceth untill the half-file-leaders ſtand even with the front of the battaillon.

A battaillon which hath doubled ranks on the flanks.



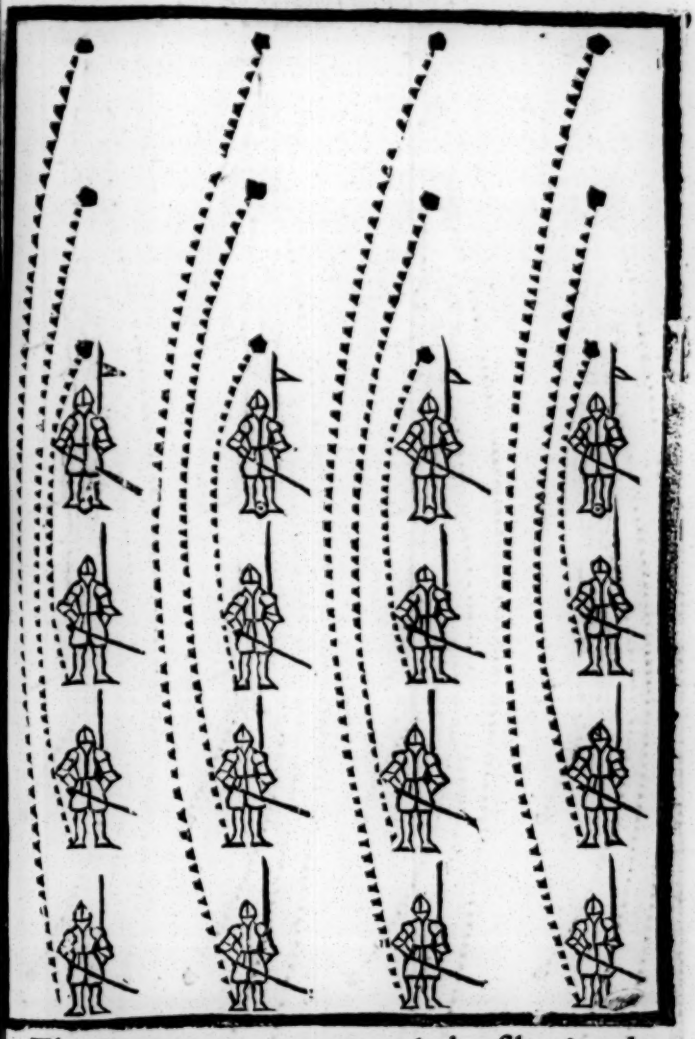
Countermarching is, when every ſouldier turning his face to the rear, doth alſo change his place, ſo to exchange the ſouldiers of the one part of the battaillon, to another part.

It is performed by files and ranks, and each of theſe is done three wayes, the Macedonian, Laconian, and Perſian or Cretan.

The countermarch by files is to turn the face to the rear, and ſo to bring the file-leaders again to be foremoſt.

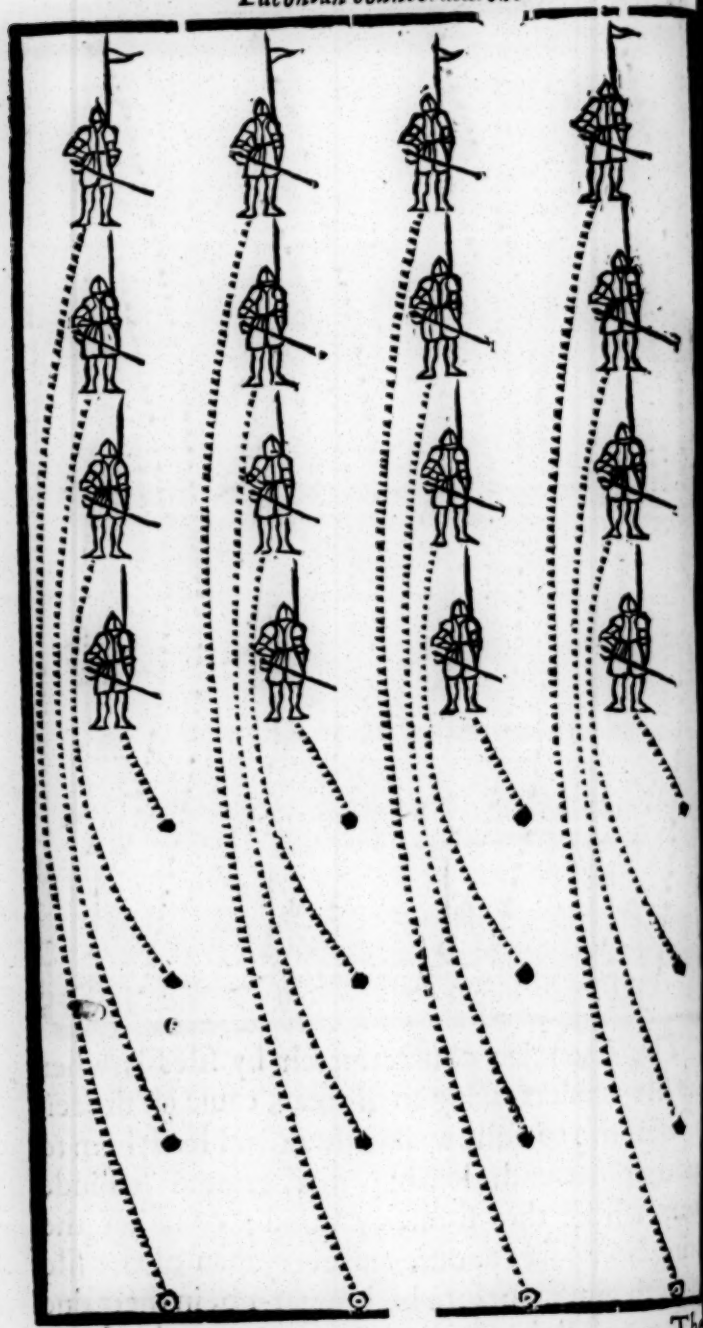
The Macedonian countermarch by files is, when the file-leaders face to the rear and ſtand faſt, then all the reſt of each file paſſe through and ſtand behinde their own leaders, by which means the battaillon leaves before it, for the field of combat, the ground where it ſelf ſtood, as appeareth by the figure following.

A battaillon which hath performed the Macedonian countermarch.



The Laconian countermarch by files is when the file-leaders facing to the rear, cauſe all the reſt of their file to follow after them, and lead them to another ground, leaving that ground behinde them where they formerly ſtood; or rather the bringers-up face about, and every man of the file placeth himſelf before his bringer-up, in their due places, untill the file-leader come up to the front.

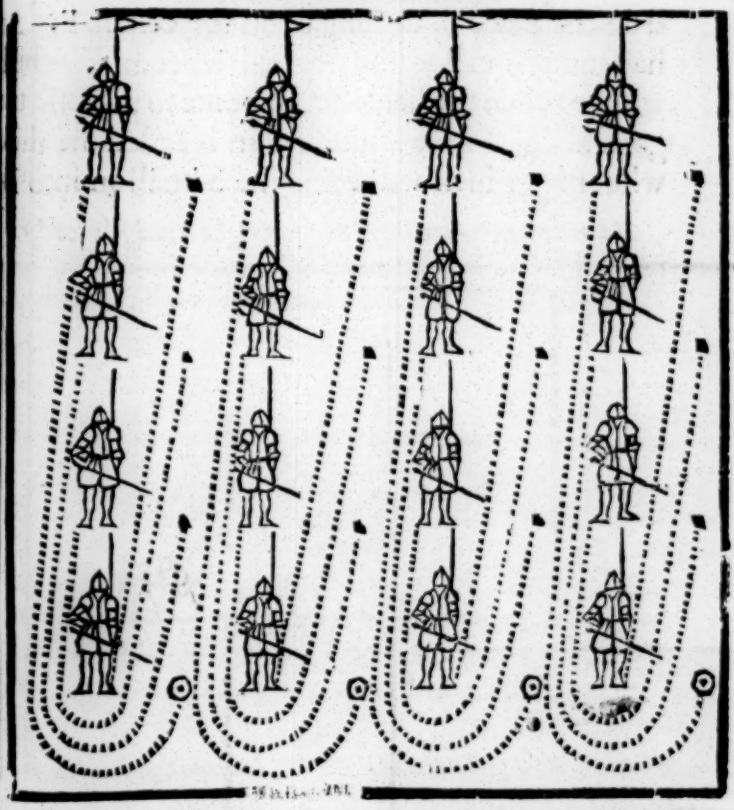
A battaillon which hath performed the Latonian countermarch.



The

The Perſian or Cretan countermarch, is when the file-leaders face about, and draw their files after them, and come into the place of the bringers-up; and the bringers-up come into the file-leaders places; the battaillon poſſeſſing the ſame ground it had before.

A battaillon which hath performed the Perſian or Cretan countermarch.



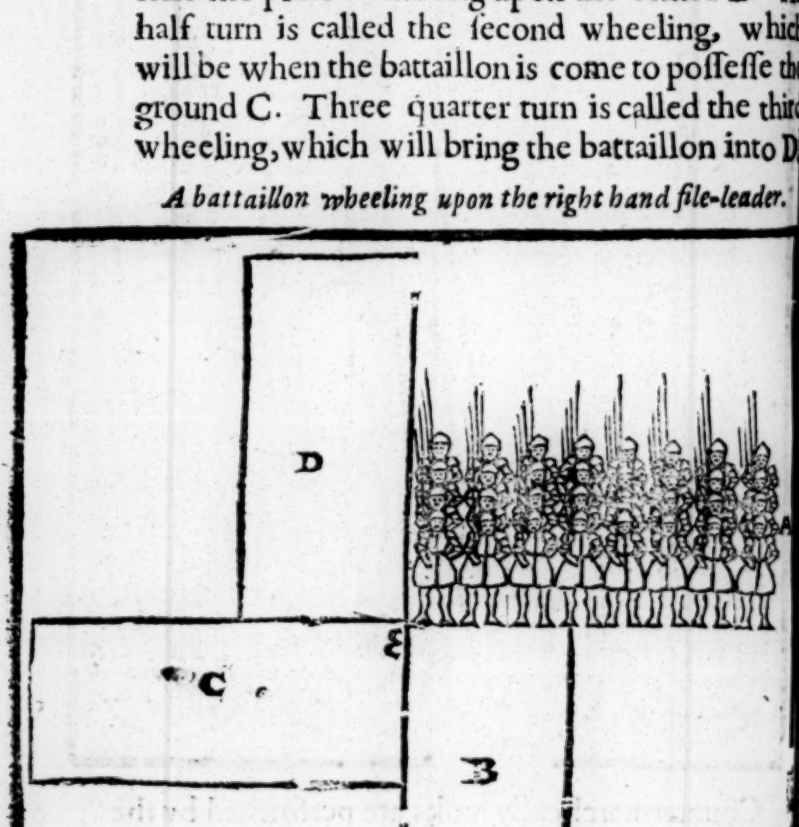
Countermarches by ranks are performed by the ſame rules and wayes, as hath been ſhewed in thoſe of files.

Wheeling is when the whole body of the battaillon turneth, which is done upon the angles of

the battaillon (upon the right or left hand file-leader) or on the middle of the front (the middle file-leaders being as the center) or on the center of the battaillon.

When the battaillon wheeleth upon the right hand file-leader, it wheeleth to the right hand. When it is upon the left hand file-leader, it wheeleth to the left. A quarter turn is called the first wheeling, as when the battaillon A. comes to poſſeſſe the place B. turning upon the center E. A half turn is called the ſecond wheeling, which will be when the battaillon is come to poſſeſſe the ground C. Three quarter turn is called the third wheeling, which will bring the battaillon into D.

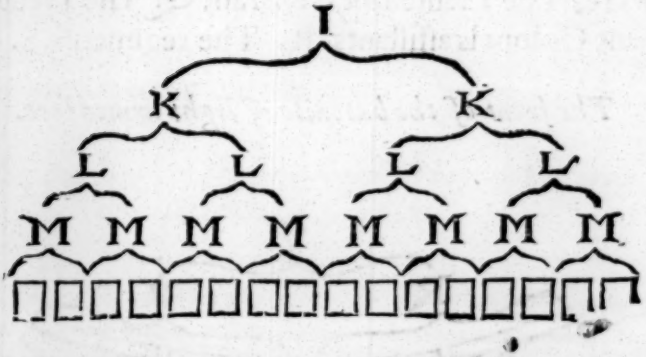
A battaillon wheeling upon the right hand file-leader.



The

The words of command are, Make ready your armes, Put your ſelves in battalia, Make even your files and ranks, Take your diſtances, Advance your pikes. Faces to the right, As you were; Faces to the left, As you were; Faces to the rear, As you were; Files to the right double, As you were; Double your files advancing, As you were; Double your files by the half ranks, As you were; Ranks double by ranks, As you were; Ranks double by the half files, As you were; Ranks double on both flanks, As you were. Countermarch, &c. As you were. Wheel, &c. As you were.

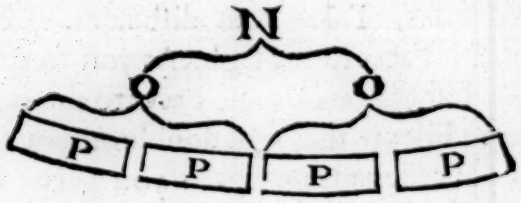
Sixteen companies made a regiment, which conſiſted of 4096 men; the officers of this regiment were, one Colonell, I. two Lieutenant Colonels, K. foure Sergeant majors, L. Eight Colonels aſſiſtants, M. The ſquares repreſent the companies, each of them having their Captain, □.



Foure regiments made the battaile of heavie armed foot; the two on the right hand were called the right wing, and the two on the left, the left wing.

The officers of theſe foure regiments were, the Generall of foot, N. The Lieutenants Generall, O. The regiments are, P.

The front of the battaile of heavie armed foot.



So much concerning the heavie armed foot, which differed not from the light armed concerning their order, but onely in their number, for the light armed had their files but of 8 deep, in all the reſt they were alike. For they had as many files, as many companies, as many regiments, as many officers, diſpoſed in the ſame order

Foure regiments made the front of their battaile, and two made a wing: their commanders were, The Lieutenant Generall, Q. The Lieutenant Colonels aſſiſtants, R. The regiments, S.

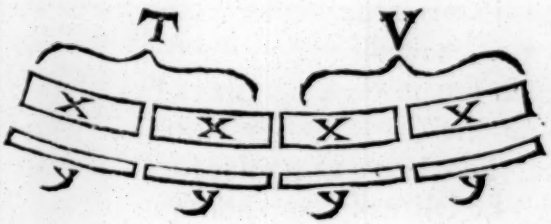
The front of the battaile of light armed foot.



Sometimes the light armed foot marched before the heavie armed, ſometimes they marched on their flanks, ſometimes between them, and ſometimes in their rear.

The

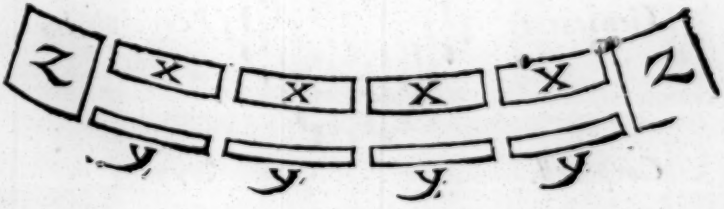
The form of battaile of the foot, when the heavie armed marched before the light armed.



T. is the left wing. V. is the right wing. X. the heavie armed regiments. Y. the light armed regiments.

The horſe were ſometimes placed round about the armie by ſquadrons, ſometimes on the wings, and alſo on the rear, ſometimes amongſt the armie on the wings of the battaillons, and ſometimes onely on the wings of the armie, which they did moſt uſually, dividing them into two equall parts, placing the one half on the right wing, and the other half on the left wing.

The form of the armie ranged in battaile, as well Infanterie as Cavallrie.



X. are the heavie armed foot. Y. the light armed foot. Z. the horſe, the one half on the right wing, and the other half on the left.

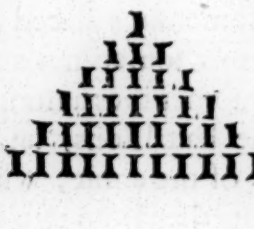
As they which uſe flying weapons were but half the number of the pikes, ſo the horſe were but half the number of thoſe which uſed flying weapons, that is, a fourth part of the foot.

The Perſians and Sicilians diſpoſed their troops of horſe in ſquare bodies, as the French do now adayes, but the Scythians, Thracians, and Macedonians put them into a triangular form, or wedge; and the Theſſalians into a rhomb or diamond.

They ordered their horſe in theſe wedges and rhombs, ſometimes by files, and ſometimes by ranks, as in theſe figures.

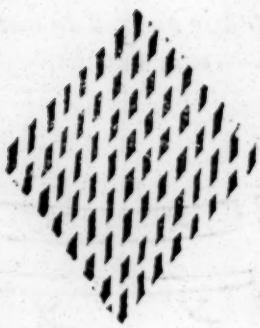
Captain. *Ilarchos.*

Lieutenant. *Plagiophylarchos.*



Captain. *Ilarchos.*

Lieutenant. *Plagiophylarchos.*



Corporall. *Uragos.*

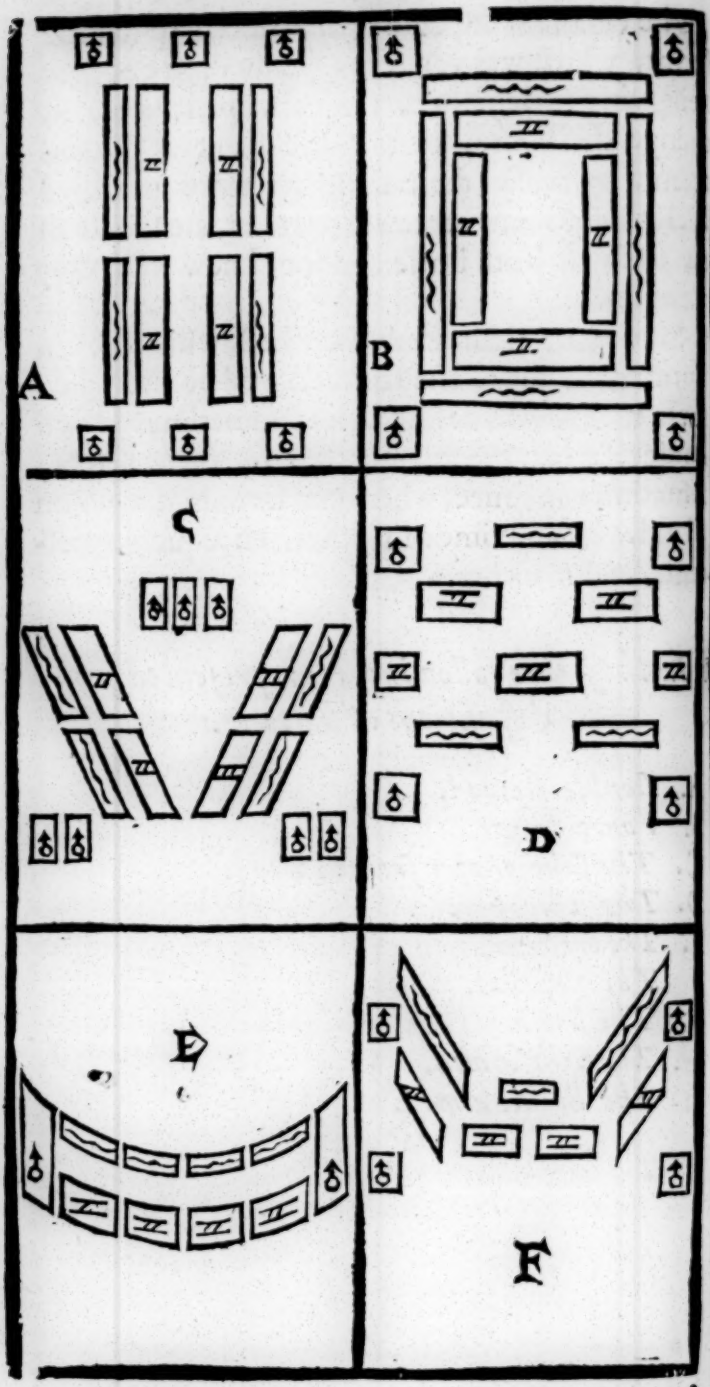
The

The Grecians disposed their armies into sundrie forms, which was very easie for them to do, they being able to lengthen, thicken, open, close it, change the figure, or turn the front as pleased them; by reason their souldiers were practised in all the motions aforesaid; and at the sound of the trumpet both horse and foot knew what they were to do.

Sometime their armie marched with an even front, according to the form shewed before, when their enemie was before them; sometimes in two bodies, when the enemie was on their flanks; sometimes in foure, when they were in danger on all sides: sometimes in sithes, checquers, crescents, and manches.

In the figure following are represented six dispositions of battaile.

A. *Double fronted.*
B. *Foure fronts.*
C. *The sithe, or open fronted wedge.*
D. *The checquer.*
E. *The crescent.*
F. *The manches.*
♎. *The horse.*
♒. *The light armed.*
H. *The heavie armed.*



A

A battaillon which had a greater depth then front, they called *Orthion*.

That which had the front exceeding the depth, *Plagion*.

That battaillon is called oblique which fighteth by the wings, one wing serving for the vanguard.

When the battaile was begun to be ranged by the wings, and was ended at the middle, it was called *Parembole*.

When they began to range their battaile by the midst, and finished it on the wings, it was called *Prostaxis*.

When (the heavy armed foot being first placed) the light armed were placed at their front, it was called *Protaxis*.

When (after that the heavie armed were ranged) the light armed foot were placed in their rear, it was called *Epitaxis*.

When the light armed foot were ranged in the intervalls between the pikes, it was called *Entaxis*.

When the light armed were placed on the wings of the whole armie, they called it *Hypotaxis*.

Of

Of the heavie armed foot, called Hoplites.

Number of men.	*Files.*	*Greek names of the troops.*	*The names interpreted.*	*Greek names of officers.*	*Officers names interpreted.*
4.		Enomotia.	A quartain.	Enomotarcha.	A quartainer.
8.		Dimœria.	An half file.	Dimœrites.	An half file-leader.
16.	1.	Lochia.	A file.	Lochagos.	A file-leader.
32.	2.	Dilochia.	Two files.	Dilochites.	A Lanſpaſſado.
64.	4.	Tetrarchia.	A ſquadron.	Tetrarcha.	A Corporall.
128.	8.	Taxiarchia.	A centurie.	Taxiarcha.	A Centurion.
256.	16.	Syntagma.	A companie.	Syntagmatarcha.	A Captain.
512.	32.	Pentacoſiarchia.	A double companie.	Pentacoſiarcha.	A Colonels aſſiſtant.
1024.	64.	Chiliarchia.	A brigado.	Chiliarcha.	A Commander of a brigado, or Sergeant major.
2048.	128.	Merarchia.	A double brigado.	Merarcha.	A Lieutenant Colonell.
4096.	256.	Phalangia.	A regiment.	Phalangarchos.	A Colonell.
8192.	512.	Diphalangia.	One wing of the regiment.	Diphalangarchos.	Lieutenant Generall of foot.
16384.	1024.	Tetraphalangia.	The battaile of the heavie armed foot.	Tetraphalangarchos.	The Generall of foot.

Of the light armed foot, called Pſyllagi.

Number of men.	*Files.*	*The Greek names of the troops.*	*The names interpreted.*	*The Greek names of the officers.*	*The officers names interpreted.*
4.		Dimœria.	Half a file.	Dimœrites.	Half file-leader.
8.	1.	Lochia.	A file.	Lochites.	A file-leader.
16.	2.	Dilochia.	Two files.	Dilochites.	A Lanſpaſſado.
32.	4.	Syſtaſis.	A ſquadron.	Syſtaſiarchos.	A Corporall.
64.	8.	Pentecontarchia.	A centurie.	Pentecontarchos.	A Centurion.
128.	16.	Hecatontarchia.	A companie.	Hecatontarchos.	A Captain.
256.	32.	Pſyllagia.	A double companie.	Pſyllagiarchos.	A Colonels aſſiſtant.
512.	64.	Xenagia.	A brigado.	Xenagiarchos.	A Sergeant major.
1024.	128.	Syſtema.	A double brigado.	Syſtemarchos.	A Lieutenant Colonell.
2048.	256.	Epixenagia.	A regiment.	Epixenagiarchos.	A Colonell.
4096.	512.	Stiphos.	One wing of the battaile.	Stipharchos.	The Sergeant major Generall of foot.
8192.	1024.	Epitagma.	The battaile of light armed foot.	Epitagmarchos.	The Lieutenant Generall of foot.

Of the horſe.

Number of men.	*The Greek names of the troops.*	*The names interpreted.*	*The Greek names of officers.*	*Officers names interpreted.*
36	Embolos.	Half a troop.	Embolarchos.	A Lieutenant.
64	Archia.	A troop.	Archos.	A Captain.
128	Epilarchia.	A double troop.	Epilarchos.	Sergeant major.
256	Tarentinarchia.	Foure troops.	Tarentinarchos.	Lieutenant Colonell.
512	Hipparchia.	A regiment.	Hipparchos.	Colonell.
1024	Ephipparchia.	A double regiment.	Ephipparchos.	Sergeant major Generall.
2048	Telarchia.	One wing of the horſe.	Telarchos.	Lieutenant Generall.
4096	Epitagma.	The groſſe of Cavallrie.	Epitagmarchos.	Generall of horſe.

Of the Romane Militia, in the time of Polybius.

Chap. XVII.

THe Romanes managed their martiall affairs after this manner : They choſe out of all the people ſuch as were moſt fit to bear armes, as well for the Infanterie as for the Cavallrie.

Concerning the Infanterie, the pooreſt and youngeſt of them were appointed to be *Velites*; the next above theſe, to be *Haſtati*; they which were in the flower of their age, to be *Principes*; and the ancienteſt to be *Triarii*.

The armes of theſe foure ſorts of ſouldiers were theſe : The *Velites* bore a ſword, a javelin or dart three foot long, and an inch thick, with an iron at the end one foot long, a target of three foot in diameter, and an head-piece of leather ; ſome bore ſlings, and ſome bows.

The *Haſtati* and *Principes* bore each of them a target (two foot and an half broad, and foure foot long, or foure foot and an handfull) a ſharp-pointed ſword, and cutting on both ſides, and very ſtiff, an head-piece of braſſe with creſts and plumes, two piles of wood, the one ſlender as a dart, three cubits long, with an iron at the end; and one thick one, an handfull in thickneſſe, three cubits alſo in length, at the end whereof there was an iron of the length of the pile, half whereof was driven into the wood, which was faſtened ſtrongly thereunto, the other half extended, with a ſharp point, being furniſhed with hooks.

This

This iron, next to the wood, was one finger and an half thick, the finger being accounted at foure barly kernels, and the handfull at foure fingers breadth.

The *Triarii* bore the ſame armes which the *Principes* did, ſaving the piles, for in ſteed of them they bore pikes.

The *Haſtati* uſed to bear them in former time, and had their name from thence, but they quitted them to take piles.

The *Haſtati*, *Principes*, and *Triarii* bore a breaſt-plate of braſſe or iron, a foot ſquare; and the richer ſort armed themſelves with ſcales or mails, faſtned together with hooks.

In a legion there were 4200 men of the foure ſorts of ſouldiers aforeſaid, *Velites*, *Haſtati*, *Principes*, and *Triarii*; divided after this manner: There were 600 *Triarii*, 1200 *Principes*, 1200 *Haſtati*, and as many *Velites*.

As well the *Haſtati*, *Principes*, as *Triarii*, were divided each into ten parts, called Maniples; ſo that in a legion there were 30 Maniples, without reckoning the *Velites*; for they were equally diſtributed amongſt each Maniple. The *Haſtati* being 1200, divided into ten Maniples, each contained 120 men; ſo much were thoſe of the *Principes*, and 60 thoſe of the *Triarii*; and dividing the 1200 *Velites* by 30, to ſerve for ſuch as uſed flying weapons to the Maniples aforeſaid, it will appear that every Maniple of *Velites* contained 40 men.

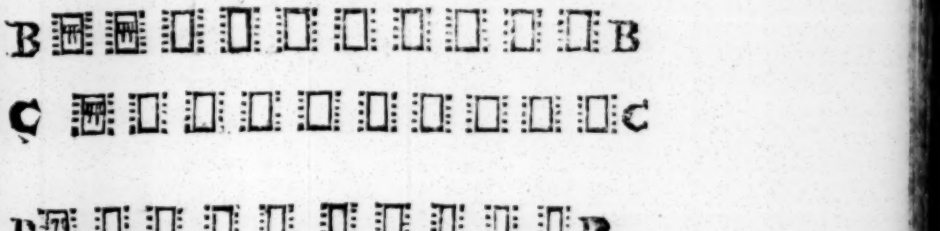
One Maniple of *Haſtati*, one Maniple of *Principes*, and one of the *Triarii* with the *Velites*, made a Cohort: for there were ten Cohorts in a Legion, and ſix Maniples in a Cohort; namely, one

one of the *Haſtati*, one of the *Principes*, one of the *Triarii*, and three of the *Velites*.

The *Velites* fought disbanded, keeping neither rank nor order, and it was their dutie to begin the skirmiſh and battaile; but the *Haſtati*, *Principes*, and *Triarii*, were ranged into Maniples. All the Maniples of the *Haſtati* ſtood in one front, ſo did thoſe of the *Principes*, in the rear of them, and thoſe of the *Triarii* in like manner in the rear of the *Principes*.

The diſtance of the Maniples was ſuch, that one Maniple might ſtand betwixt two of them, becauſe that if the *Haſtati* were repulſed, they might retreat into the intervalls or ſpaces which were between the Maniples of the *Principes*, and ſo fight together. And if both *Haſtati* and *Principes* were defeated, they might retreat between the Maniples of *Triarii*, and ſo fight again all together, as well *Haſtati*, and *Principes*, as *Triarii*.

The form of a Legion embattailed.



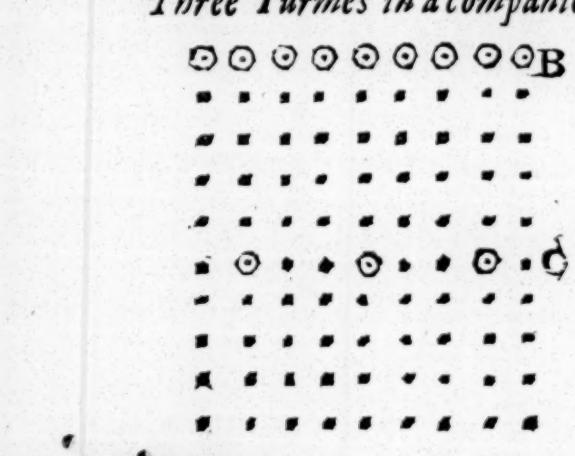
B. B. *are the Maniples of Haſtati.* C. C. *thoſe of the Principes.* D. D. *thoſe of the Triarii. The bricks which are about the Maniples, repreſent the Velites.*

Over every Maniple were two commanders, called Centurions, a firſt, and a ſecond; when both of them were preſent with their Maniple, the firſt com-

commanded the right flank, and the ſecond the left: and if one of them were abſent, he which was preſent commanded the whole Maniple. In every Maniple were two Enſignes one under each Centurion, and two Sergeants. Every ten men had alſo a commander, called a Decurion, and over all the Legion there were ſix Tribunes or commanders in chief.

Every Legion had 300 horſe, divided into ten troops called Turmes, every one of which had 30 ſouldiers, three whereof were Decurions or file-leaders, and three bringers-up. The firſt file-leader, called the Prefect, commanded the troop, in his abſence the ſecond, and in eithers abſence the third did it. In every troop there was a Cornet.

Three Turmes in a companie.



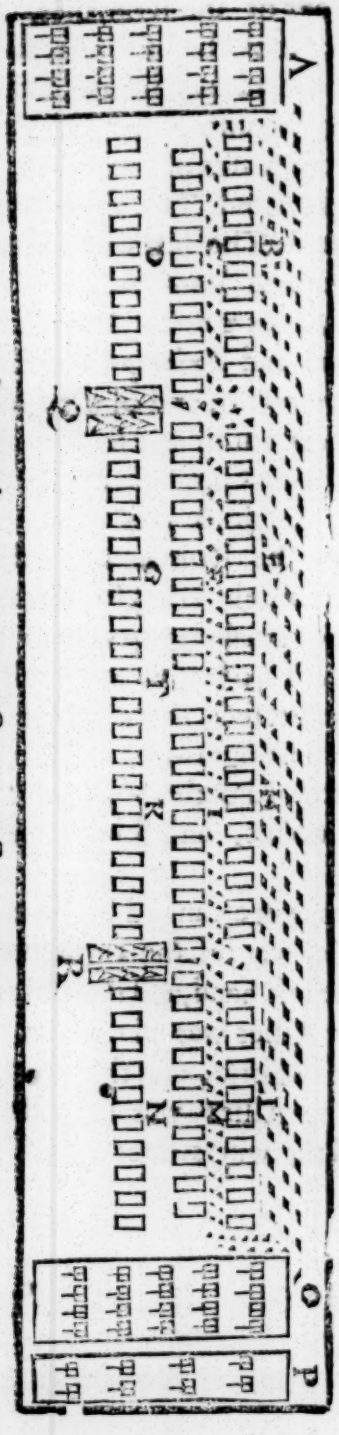
B. *The file-leaders.*
C. *The three Cornets.*

The Romanes made uſe of their Allies in their warres, and had a like number of foot of their Allies as they had of citizens of Rome, and the Legions were alike in form, armes, and number of men: but concerning the Cavallrie, the Allies were

were double the number of the Romanes. It is true that of the foot they took the fifth part, and of the horſe the third part for extraordinarie, and the reſt of the foot they divided into two equall parts, which they placed on the flanks of the armie, and called thoſe on the right hand, The right wing, and thoſe on the left hand, The left wing, ſo that when the Roman Legions conſiſted of 4200 men, the wings of the Allies were 3360, and the Maniples of the *Haſtati* and *Principes*, each of them were 92; of the *Triarii* 60; and of the *Velites* 30. And the troop of extraordinarie foot in every wing was 840 men. The Cavallrie of the Allies for every of their Legions was 600 horſe (double the number of the Romanes) of theſe they took a third part (namely 200) for extraordinarie, and divided the remaining 400 into ten Turmes, each of them of 40 horſe, over which there were a Cornet, a Prefect, three Decurions or file-leaders, and three bringers-up, as amongſt the Romanes. Theſe extraordinaries were imployed for guards for the Conſuls, and for troops of reſerve in combats.

When foure Legions were ranged in battaile, all the Roman Cavallrie was on the right hand, that of the Allies on the left hand, and the extraordinarie Cavallrie of the Allies was placed on the right hand of the Roman horſe, and the extraordinarie Infanterie of the Allies was ranged between the Legions and the wings, over againſt the *Triarii*.

Foure Legions ranged in Battalia by Maniples.



A. *The Cavallrie of the two Wings of Allies.*

H. I. K. *The Haſtati, Principes, and Triarii of the firſt Roman Legion.*

E. F. G. *The Haſtati, Principes, and Triarii of the ſecond Roman Legion.*

L. M. N. *The Haſtati, Principes, and Triarii of the right wing of the Allies.*

B. C. D. *The Haſtati, Principes, and Triarii of the left wing of the Allies.*

Q. *The two extraordinarie Cohorts of the left wing of the Allies.*

R. *The 2 extraordinary Cohorts of the right wing of the Allies.*

T. *The Imperator or Generall.*

N. *The Legate of the right wing*

D. *The Legate of the left wing.*

O *The Cavallrie of the two Roman Legions.*

P. *The e traordinarie Cavallrie of the Allies.*

When

When the Legion consisted of 4000 men, more or lesse, it was divided according to the aforesaid proportion; as when the Legion contained 5000 men, the *Velites*, *Hastati*, and *Principes*, were each of them 1500, and the Maniples of the *Hastati* and *Principes* 150. Concerning the *Triarii*, they never increased nor diminished their number of 600, nor their Maniples of 60, and the Maniples of the *Velites* were of 50 men a piece.

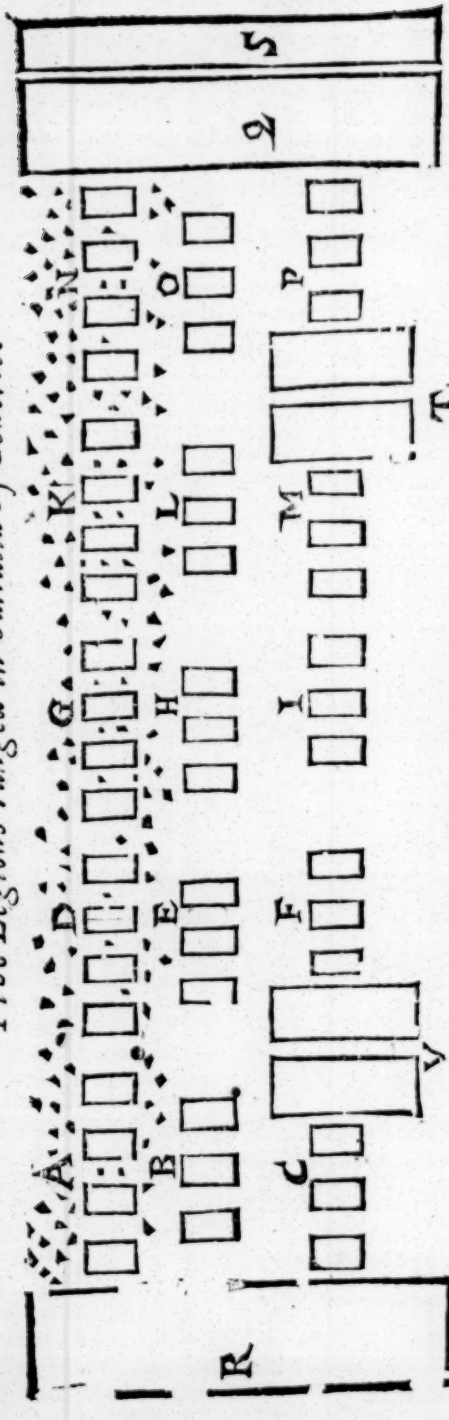
The Legions have oft-times been augmented; for in *Romulus* his time they contained 3000 foot and 300 horse.

In the time of *Camillus*, they were 4000 foot and 300 horse.

In *Cæsars* time, 5000 foot and 600 horse.

And in the time when the Sabines joyned themselves with the Romanes, it consisted of 6000 foot and 600 horse.

When the armie was thus strong, the Legions were ranged in battalia by Cohorts, and not by Maniples. As when *Cæsar* fought against *Afranius*, he placed in every Legion, foure Cohorts of *Hastati*, three of *Principes*, three of *Triarii*. The *Velites* were about the middle of the armie, and the horse on the flanks.



A. B. C. *Ten Cohorts of a Legion.*

D. E. F. *Ten Cohorts of another Legion.*

G. H. I. K. L. M. N. O. P. *are three other legions, each of them being divided into ten Cohorts.*

R. *The Cavallrie of Allies.*

Q. *The Roman Cavallrie.*

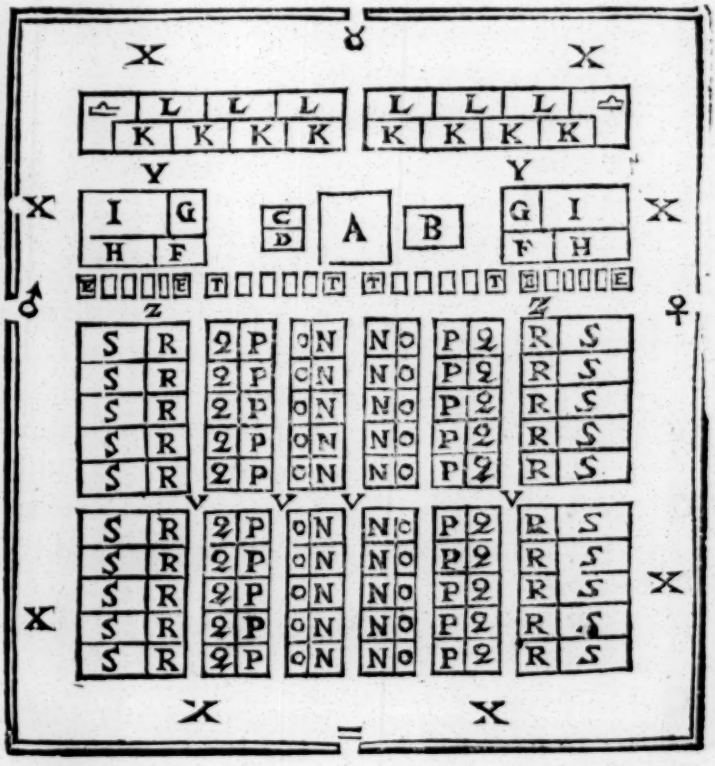
S. *The extraordinary Cavallrie of the Allies.*

T. V. *The extraordinarie Cohorts of the Allies.*

Con-

Concerning their manner of encamping, it was alſo ſuch as is here ſhewed by a quartering of two Roman Legions. And if the armie were greater, they lengthened the çamp on the right and left hand. If there were two armies together, they made two equall quarters, which they joyned on that ſide of the Pretorian gate.

The quartering of foure Roman Legions.



A. *The Pretorie, which contained* 200 *foot ſquare.*
B. *The treaſurie,* 200 *foot long, and* 100 *foot in depth.*

C. D. *The two Legates tents, the ground for each of which contained* 50 *foot in depth and* 100 *in length.*

E. *The Prefects over the Allies, whose lodgings were square; each side having* 150 *foot; their tents were* 12 *in all.*

T. *The Tribunes of two Roman Legions: their lodgings were square, of* 150 *foot aside, and* 12 *tents.*

F. *The lodgings of the Cavallrie of the* Evocati *amongst the Allies, having* 80 *foot to* 125 *in breadth.*

G. *The* Ablecti *amongst the Allies, having* 120 *foot to* 112 *in breadth.*

H. *The quarter of the foot of the* Evocati *amongst the Allies, having* 80 *foot to* 238 *in breadth.*

I. *That of the foot of the* Ablecti *amongst the Allies, containing* 120 *foot, upon* 252 *in breadth.*

K. *The extraordinarie Cavallrie, every lodging containing* 80 *foot in depth, for* 167 *in length.*

L. *The extraordinarie Infanterie, having* 70 *foot, for* 200 *in breadth, every quarter.*

N. *The quarter of* 20 *turmes of the Roman Cavallrie, each having* 100 *foot square.*

O. *The* Triarii *of the Roman Legions; the quarter of each Maniple had* 100 *foot in front and* 50 *in depth.*

P. *The* Principes *of the Roman Legions; the quarter for every Maniple was* 100 *square.*

Q. *The* Haſtati *of the Roman Legions, each Maniples quarter was* 100 *foot square.*

R. *The Cavallrie of the Allies; the quarter for their turmes was* 34 *foot in length and* 100 *broad.*

S. *All the Infanterie of the Legions of the Allies, every*

every Cohort having 100 *foot in front and* 200[a] *in depth.*

V. *The ſtreets, being* 50 *foot broad.*

X. *The alarm-place, being* 200 *foot broad.*

Y. Z. *Two ſtreets, each of them being* 100 *foot broad.*

☌. *The Pretorian gate.*

♀. *The right hand gate.*

♂. *The left hand gate.*

♊. *The Decumane gate.*

♎. *Void places reſerved to lodge ſtrangers.*

[a] *Obſerve that from the Decumane gate there runneth a ſtreet, which divideth the two Legions, which have all their quarters facing outward, and their backs meeting at that ſtreet, both fronting to their alarm-places* X.

The

The manner of forming all ſorts of battaillons.

CHAP. XVIII.

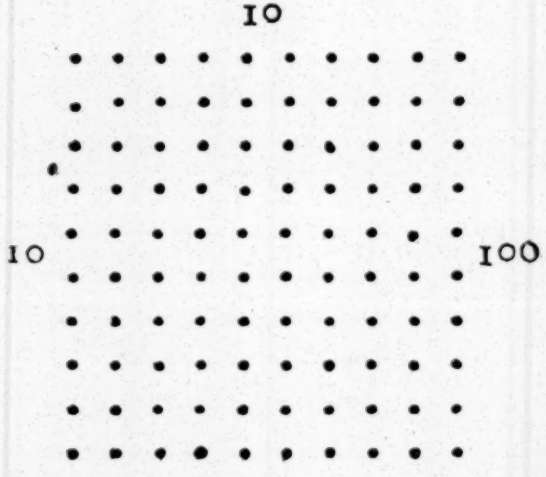
The authour followeth other writers in this chapter, which ſome (ſince) have alſo retained; but are (in my opinion) of little uſe, and ſavour of curious impertinencie.

FIve ſorts of battaillons are ordinarily made, namely, ſquare of men, ſquare of ground, doubled, when the front is to the depth according to a proportion given, and the broad fronted battaillon.

The ſpace which every ſouldier requireth, marching in battalia, is three foot in front and ſeven in depth.

To make a battaillon ſquare of men.

Suppoſe the number of men be 100, take the ſquare root of 100, which is ten which is the number of men which muſt be placed in front, and alſo in flank; As in the figure following.

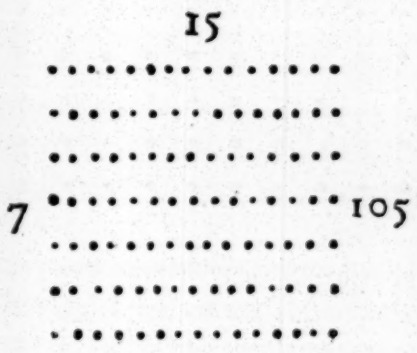


To

To make a battaillon ſquare of ground.

Suppoſe the number be 105 men, multiply it by three (which is the ſpace which every man occupieth in front) it will produce 315 : divide this number by 7 (which is the ſpace which a man requireth in depth) it will produce 45. Take the neareſt ſquare root to this number, which is 7, and that is the number of men which muſt ſerve for your files. After this divide your 105 men by 7, it will produce 15, which is the number for the front : ſo that this battaillon for every 7 men in front, hath 3 in flank.

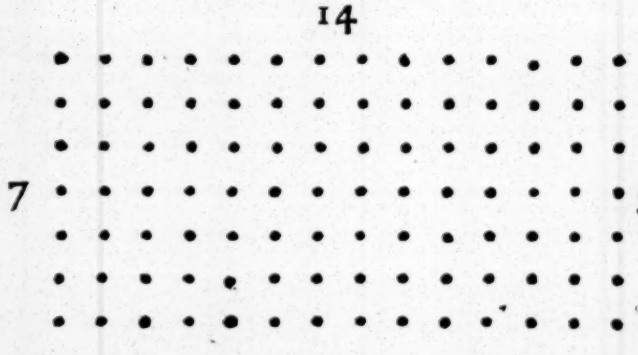
A battaillon ſquare of ground.



To make a doubled battaillon, that is, which hath twice as many men in front as in depth.

Suppoſe the number be 98 men, double this number, then will be 196. take the ſquare root of this number, which is fourteen, and that is the number of men which muſt be in front, and the half of that, which is ſeven, muſt be placed in the depth.

A doubled battaillon.

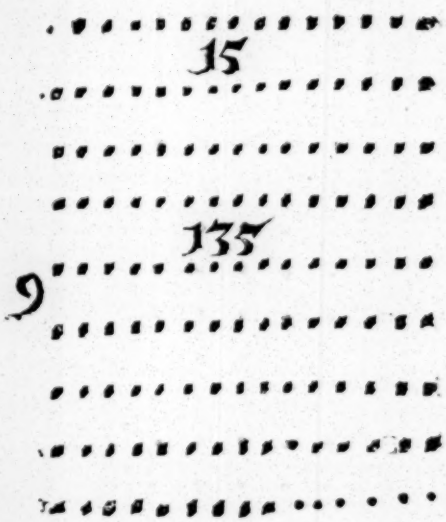


To make a battaillon whereof the front ſhall be to the depth, according to any proportion propounded.

Suppoſe the number be 135 men, to be ranged in battalia in ſuch manner, that for every 5 which ſhall be in front, there be three in depth, that is, that there be a proportion between that and the flanks, as between three and five.

Divide

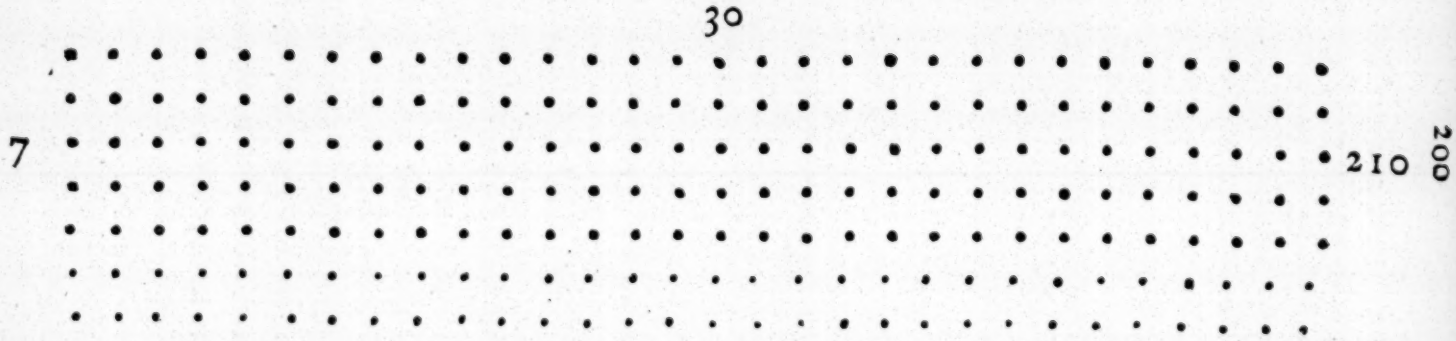
Divide 135 by 5, and multiply the product by three, and of the number which it will produce, take the ſquare root, which will be nine, for the depth of the battaillon. And to finde the front, divide 135 by 3, and multiply the product by 5, and of the product take the ſquare root, which is fifteen, as in the figure following.



To make a broad fronted battaillon.

Suppoſe the number to be two hundred and ten men, whereof you would make a battaillon which ſhall have thirty men in front; to know how many there will be in depth, divide two hundred and ten by thirty, it will make ſeven. To finde the front by the depth, you muſt divide two hundred and ten by ſeven.

A broad-fronted battaillon.



The ſquare battaillons (of men or ground) are weak of front, and thoſe of broad front are weak in depth. The Spaniards often uſe doubled battaillons. And the Hollanders broad fronted ones, for they make their files no deeper then [a] ten men.

[a] *Seeing that not onely the Hollanders, but all others, make not their files to exceed the number of ten (ſome be but eight, and the Swedes uſe but ſix) to what purpoſe ſhould the ſquare root ſerve, eſpecially in a great body?*

To finde the ſquare root, to the number of 4096.

To finde the ſquare root of a number, as if you were to make a ſquare battaillon of 1600 men, looke in the table following in the column of ſquares 1600, and you ſhall finde over againſt it in the column of roots 40, for the root or number of men which muſt be placed on all ſides of the battaillon.

A table to finde the ſquare root to the number of 4096.

Squares.	Roots.	Squares.	Roots.	Squares.	Roots.
4	2.	529	23.	1939	44.
9	3.	576	24.	2025	45.
16	4	625	25.	2116	46.
25	5.	676	26.	2209	47.
36	6.	729	27.	2304	48.
49	7.	784	28.	2401	49.
64	8.	841	29.	2500	50.
81	9.	900	30.	2601	51.
100	10.	961	31.	2704	52.
121	11.	1024	32.	2809	53.
144	12.	1084	33.	2916	54.
169	13.	1156	34.	3025	55.
196	14.	1225	35.	3136	56.
225	15.	1296	36.	3249	57.
256	16.	1369	37.	3364	58.
289	17.	1444	38.	3481	59.
324	18.	1521	39.	3600	60.
261	19.	1600	40.	3721	61.
400	20.	1681	41.	3844	62.
441	21.	1764	42.	3969	63.
484	22.	1849	43.	4096	64.

F I N I S.

A ſhort

METHOD

FOR THE

EASIE RESOLVING

OF ANY

Militarie Queſtion

propounded.

By

The Lord of PRAISSAC.

Engliſhed by *I. C.*

CAMBRIDGE:

rinted by ROGER DANIEL, Printer
to that famous UNIVERSITIE.
1639.

To the worſhipfull, my worthily honoured friend PHILIP SKIPPON Eſquire, Captain of a Companie of foot, in ſervice of the *States* of the united Provinces.

SIR,

IT pleaſed you to put me upon the tranſlation of the Lord of *Praiſſac's diſcourſes*, and (afterwards) of this laſt piece of his; which I conceive he intended, as a *Corollarium* to conclude with; or as an *Epitome* of his other tractes, to put his readers to trie what they had profited by them, by ſetting theſe wheels awork. Theſe are no ſpeculations for every *Tyro* to meddle with; but rather for ſuch as had followed your Worthie ſelf in your foure and twentie years *Militia* (in *Denmark*, *Germanie*, the *Low Countries* and elſewhere) to exerciſe their thoughts in; and to recollect thoſe things which might (perhaps) be ſlipped out of memorie. I cannot compare this piece to any thing better (for ſo much matter in ſo ſmall a room) then to that admired artificiall *Flie*, made by that famous *German Ioan. De monte regio*, (celebrated by divine *du Bartas*)

Bartas) which (not exceeding a naturall fly in bigneſſe) contained ſuch wheels, ſprings, and other engines, as made it fly from the artiſts hand round about a table, and ſo to his hand again. As little as this piece is, (and my pains in it the leaſt that may be) yet I am confident (having ſo much experience of your true candor and ſweet diſpoſition) you will dain to accept of it, from

your humble ſervant

I. C.

A

A SHORT METHOD,

for the eaſie reſolving of any *Militarie queſtion* propounded.

EVery *militarie queſtion* may be reſolved by, *Whether or no, with whom, where, when, how, and how much. Deliberating* to make *warre, peace, truce, parly, alliance, league*; Conſidering the diverſitie of *perſons*, as *compatriots, allies, confederates, mercenaries, neuters*, and *enemies*; directing your ſelf in the *action* propounded, either to *advance, abide, retreat fight, lodge, refreſh*; according to the *occaſion* which *men, means, munitions, time, works*, and the *countrey* do afford; doing all things according to *reaſon*, which proceedeth from *honour, profite, obedience, obligation, neceſſitie* and *facilitie*; uſing the help of *inſtruments* fitting for execution, as *waggons, ladders, bridges, pickaxes, ſhovels*, and *boats*; meeting with *accidents* which might befall by *noiſe, ſun, water, cold, duſt*, and *ſmoak*; by the *faſhion* of *order, commoditie, aſſurance, ſurpriſe, diligence*, and *foreſight*. So that you may make an *encycle* of nine moveable circles (as the figure ſheweth) namely of *queſtions, deliberations, perſons, actions, occaſions, reaſons, inſtruments, accidents*, and *faſhions*. Every circle containeth ſix common places, the greateſt is called the firſt, and the leaſt the ninth. If you turn the ſecond circle with a whole revolution, upon each common place of the firſt, you

ſhall finde 36 queſtions, as, *Whether you ought to make warre, whether you ought to make peace, whether you ought to make truce, whether you ought to parly, whether you ought to make alliance, whether you ought to make league. With whom you ſhould make warre, with whom you ſhould make peace, with whom you ſhould make truce, with whom you ſhould parly, with whom you ſhould make alliance, with whom you ſhould make league. Where you ſhould make warre, where you ſhould make peace, where you ſhould make truce, where you ſhould parly, where you ſhould make alliance, where you ſhould make league. When you ſhould make warre, when you ſhould make peace, when you ſhould make truce, when you ſhould parly, when you ſhould make alliance, when you ſhould make league. How you ſhould make warre, how you ſhould make peace, how you ſhould make truce, how you ſhould parly, how you ſhould make alliance, how you ſhould make league. How much you ſhould make warre, how much you ſhould make peace, how much you ſhould make truce, how much you ſhould parly, how much you ſhould make alliance, how much you ſhould make league.* And if you turn the third circle even as the ſecond, you ſhall finde that the ſaid 36 queſtions being joyned to the ſix common places of the ſaid circle, will produce 216. Namely, *Whether you ſhould make warre with your compatriots, whether you ſhould make peace with your compatriots, whether you ſhould make truce with your compatriots,* &c. Theſe 216 queſtions are reſolved by the common places of the fifth, ſixth and ninth circles.

If you have concluded to make warre, the queſtions to be propounded about the *actions* thereof, are to be taken out of the firſt and fourth circles, which will produce 36 propoſitions (as was ſaid of the firſt and

ſecond

ſecond) namely, *Whether you ought to advance forward, whether you ought to abide ſtill, whether you ought to retreat, whether you ought to fight, whether you ought to lodge, whether you ought to refreſh. With whom you ſhould advance, with whom you ſhould abide, with whom you ſhould retreat, with whom you ſhould fight, with whom you ſhould lodge, with whom you ſhould refreſh. Where you ſhould advance*, &c.

The affirmation of the 36 laſt propoſitions is taken from the common places of the fifth, ſixth, ſeventh, eighth, and ninth circles. Now, that theſe common places may be ſufficient to afford reaſons for the confirmation of theſe propoſitions, the following example will teſtifie, and will give inſtruction for the order which muſt be obſerved, for the reſolving of other queſtions propounded.

The firſt queſtion is, *Whether you ſhould make warre?* whereupon you muſt conſider of the *reaſon* which you have ſo to do; whether it be *honour*, as to conſerve your own, to maintain another, to ſettle juſtice, to puniſh evill doers Whether it be *profit*, as to raiſe your ſtate, to augment your dignities, to gather wealth, to advance your friends. Whether it be *obedience* due to the Soveraigne, or to thoſe which himſelf or the laws have ſet over us. Whether it be *obligation*, being bound thereunto either by equitie, or oath, or conſanguinitie, or alliance. Whether it be *facilitie*, as to reſiſt the aſſaults of the enemie, to uſurpe his dominions, and to bring him under ſubjection in ſhort time, and with little charge.

Having conſidered of the *reaſon* you muſt come to the *occaſion*, which may be either in reſpect of *men*, which are either plebeians or militarie. Concerning the plebeians (if it be in a free ſtate, and not a monar-

chie) to know whether they will consent and approve of the *action*, furnish men for the warre, deliver places for securitie, money to bear all the charges, and submit themselves to your judgement and discretion. Concerning the militarie men, whether they be willing to obey you, deliver you hostages, and put their fortunes, goods, and honours into your hands.

Now for the regard of *means*, as whether you have good store of money beforehand, or means to get it, by favour of friends, or to take it from your enemies, making warre at his charge, or having good store of auxiliaries from your allies, and means to pay them.

And in respect of *munitions*, whether you have abundance of victuall, as well for the provision of cities, as for the feeding of the armies, magazines well stored, great store of draught horses for the ready drawing of the train where it shall be needfull.

Or in regard of the *time*, whether it be when there is a dissention, fomenting one of the parties; in the minoritie of the Soveraigne, insinuating with his officers; in the midst of a profound peace, when there is no doubt of combinations, when a great mortalitie rageth amongst the enemies, and famine weakneth them; or when you conceive that the fear of warre will constrain them to give you more then you could get by it.

Or in respect of the *works*, whether you possesse strong cities, assured havens, and well fortified cittadels.

Or in regard of the *countrey*, whether you possesse the straits, the key sides, bridges, that so you may facilitate the entrance of your releefs, and easily to joyn your self to them, and by that means be master of the field, possessing so much of the countrey as you are able

able to guard, and abandoning that which you could not be able to maintain, and whereof the coſt would ſurpaſſe the profit.

Concerning the *faſhion* of proceeding, it is taken from the *order* which you muſt obſerve before you execute any thing; as whether you ought to begin, or to give occaſion to the enemie to do it, in what place you ſhould give the firſt aſſault, in what ſtaple towns; and if it ſhould be ſo, how you ſhall march thither, with what quantitie of Infanterie, Cavallrie, and Artillerie you ſhould execute the enterpriſe; whether you be able to do it alone, or whether you muſt call your friends to help you; who (amongſt all) ſhall begin, who ſhall do the exploit, who ſhall conſerve that which ſhall be gotten.

Then what commoditie you ſhall reap thereby, whether you ſhall be in peace afterwards, or the nobilitie be better pleaſed, the church more flouriſhing, juſtice better adminiſtred, the people leſſe burthened, the King better ſerved, the ſtate better ſecured; what *commoditie* will facilitate the enterpriſe, will it be vicinitie, will it be the weakneſſe of the enemie, of his countrey, of his people, of his towns, of his bad councell, of his diſorder in his actions, or that you have no want of any thing.

What *Aſſurance* have you that the execution will ſucceed according to your deſire; and if that be wanting, how ſhall you aſſure your affairs; will you hazard all your fortune at a time, will you play at double or quit, or will not that which you undertake be able to hurt you but in part, or but little, or nothing at all, neither to your ſelf nor your friends.

Shall you *ſurpriſe* your enemie at unawares, keeping ill guard in his cities, or being weakly followed in the field,

field, at a time when he is solacing himself either with courting or hunting, and without being able to be advertised of your designe, untill he be fallen into your hands?

Can you by your *diligence* prevent his knowledge, and so your own obstacles and his remedies?

Have you *foreseen* whatsoever may befall you, as well in your designe, in the action, and after the execution thereof, to prevent the mischief, and to advantage your self by the good thereof? will your confederates be faithfull to you? If false, shall they be able to hinder the enterprise in the whole or onely in part, or in your very person, by seizing thereon and delivering you into the enemies hands? and if they can, by what device shall you be able to escape them? If the things abovesaid be so advantageous as you ought to conclude for warre, you must then come to the other question, *with whom you ought to make it*, whether with your *compatriots*, or with your *allies*, or *confederates*, &c. and to see the *reason*, the *occasion*, and *fashion* by which you should proceed, passing through all these common places.

That done, you must handle the questions which concern the *action*, which are, *whether or no*, *with whom*, *where*, *when*, *how*, and *how much* you shall do that which you have concluded (as hath been shewed in the first question:) as if a generall had caused his armie to be mustered, he shall deliberate wherein to imploy it, as *whether* he should cause it to *advance*, or *abide*, or *fight*, &c. Suppose *if he ought to cause his armie to march*, he ought to do it when it is to fight with the enemie, to hinder him from passing a champain, a river, a strait, to cut off his releef; or for his own effecting of these things, or to besiege some place,

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to releeve it, to cut off a convoy, or to conſerve, or pillage the open countrey.

You muſt *advance*, when your *abiding* or *retreat* would be diſhonourable, when the hope of the *profit* is great, when ſuperiours *command* it, when alliance *oblige* you to it, when *neceſſitie* conſtrains you thereunto, and when the thing is ſo *facile* as nothing can oppoſe you.

That which will *occaſion* your moving, will be the advantage of *men*, be it on foot or horſeback; of *means*, as money, waggons, artillerie; of *munitions* both for the mouth and for warre; the commodiouſneſſe of *time*, fair, cold, or rain. Of the *works*, as forts, trenches, redouts. Of the *countrey*, as large, ſpacious, and even, to range your battaillons and ſquadrons; or cloſe and mountainous, to paſſe undiſcovered and ſheltred. The *inſtruments* which may facilitate the deſigne, are *waggons* to carrie the munitions; *ladders* to ſerve for ſurpriſes; *bridges* to paſſe over moats and rivers, *pickaxes* and *ſhovels* to make the trenches and other works, and *boats* to paſſe rivers. The *accidents* which you ought to foreſee, are the *noiſe* which hindreth the ſouldiers from hearing the orders, and affrighteth them; the *ſunne*, which may dazle them; the *water* of pools, moors or rain, which may diſcommode you; the *cold*, which may put your ſouldiers out of caſe to fight; the *duſt* raiſed in the field by the footing; and the *ſmoak* of firings, which hinders you from ſeeing the battaillons, and the actions of the enemie. After that, you muſt conſider the *faſhion* of your march, what *order* your Infanterie ſhall obſerve, what your Cavallrie, and what your Artillerie; what commoditie this marching will afford you, whether it will advantage you, and whether you ſhall be the better for

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it in the whole or in part. Wherein your *assurance* will be, whether in your enemies being farre off, or in the strength of your site, or of the territorie, or vicinitie of friends; whether you must march upon *surprise* in the night, to pillage; with such *diligence* as you may be farre before you be discovered; *foreseeing* for all things necessarie, as to be able to make resistance, being charged; to arrive timely, before the danger; to be strongly and commodiously encamped, in such sort as you may not fear neither the surprises of the enemie, nor the violence of his assaults.

These common places may be applied as well to divers other actions as to that of warre, provided that you know which to choose, and how many.

FINIS.

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